

PROCEDURES MANUAL

T4F™ THE FUNCTIONAL TRAINER

and

T4U™ THE UNIVERSAL TRAINER

developed by Dr. Chris Farrell (BDS Sydney University)

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MYOFUNCTIONAL RESEARCH CO.

- designers and manufacturers of innovative dental appliances -

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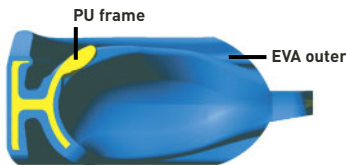
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Overview

The **T4F™ Functional TRAINER** and the **T4U™ Universal TRAINER** are appliances employing the new “SEMI-MOULDABLE” customisation technology developed by Myofunctional Research Co. They are versatile appliances, each with a variety of uses in the Orthodontic and the General Dentistry practice. This manual explains the applications, customisation and fitting of these appliances.

CUSTOMISABLE APPLIANCES - NO LAB FEES



DUAL MOULDING TECHNOLOGY developed by Myofunctional Research Co. allows a universally sized, preformed appliance to be customised for the individual patient in about the same time as taking a bite or impressions.

**T4F™
THE FUNCTIONAL TRAINER**

...is an immediate, customisable, orthopaedic appliance.

- Pre-moulded into Class I, fits tightly to upper arch.
- Remouldable to accomodate erupting dentition.
- Interim retainer between Phase I and II treatments.
- Class II correction and retention(similar to Bionator & Clark Twin Block).



**T4U™
THE UNIVERSAL TRAINER**



Cross Section shows tooth channels and semi-rigid PVC core with EVA outer.



...is an immediate, customisable, multifunctional, single arch appliance.

- TMJ Splint - hard, customisable.
- Single Arch Orthodontic Retainer.
- Habit Retrainer (high retention).
- Customisable Sports Mouthguard.

T4F™ The Functional TRAINER

The T4F™ has been developed using new semi-mouldable technology from Myofunctional Research Co. The appliance is made in 2 parts. The inner part is flexible but not thermoplastic below 100°C. The outer covering material IS thermoplastic below 100°C. This allows the outer surface to be moulded to the patient's dentition for retention, while the appliance maintains its inherent shape. This can be done either in the mouth (direct method) or on a model (indirect method, recommended for younger children). It makes easy fabrication of a “functional” appliance or a double arch retainer possible within the practice in minimal time. NO LAB BILLS.

Applications

“Functional” Appliance and Orthodontic/Orthopaedic Retainer

One of the most common applications of the T4F™ is the use after or in place of a mandibular translatory or “functional” appliance for Class II correction. It has several advantages over appliances like a Clark Twin Block, a Bionator or a Biobloc Stage III. The T4F™ is less expensive, requires no external lab work, and does not break. With the inbuilt myofunctional training of the tongue tag/guard and the lip bumpers, soft tissue re-training is performed simultaneously. That means less daytime use is required. It can be repeatedly customised as the dentition changes. Also, the same use can be applied after fixed appliance treatment, particularly in corrected Class II cases. Often the A-P correction can be lost in the retention stage in these Class II cases. The T4F™ can be moulded to maintain both the dental and the orthopaedic corrections. It can be used in conjunction with a lower 3-3 retainer if lower anterior stability is a problem.

It does take a little time getting used to the moulding procedures for the T4F™. However, the advantages of convenience, lower cost and better treatment results reward the effort.

Active Positioner for minor dental corrections

After Phase I treatment or fixed appliances, minor dental misalignments can be corrected with the T4F™ just like a conventional positioner, without the expense of fabrication. Minor dental relapse can also be treated in the same manner.

Dental corrections can be made by cutting misaligned teeth off the model with a fine (crown and bridge) saw. The teeth are then re-set to ideal position using modelling wax. After this is completed, duplicate the model(s). The T4F™ is then moulded by the indirect method on the new model. This can save the necessity of further treatment. This is the most convenient method for detailing the alignment after treatment, or after minor relapse.

Myofunctional TRAINER

Most malocclusions have a myofunctional cause. Mouth breathing, tongue thrusting and incorrect swallowing patterns are ever present partners in malocclusion. The best orthodontic result can be compromised from relapse during or after the retention phase. At the finish of active treatment the T4F™

T4F™ The Functional TRAINER

APPLICATIONS

“Functional” Appliance and Orthodontic/ Orthopaedic Retainer

The advantages
of convenience,
lower cost and
better
treatment
results

Active Positioner for minor dental corrections

Myofunctional TRAINER

can be used to retain the corrected result while performing myofunctional training, just like the **T4K™** and **T4B™**. Use is one hour (minimum) daily plus overnight while sleeping. The **T4F™** can be substituted for the **T4K™** when there is a problem of the **T4K™** persistently falling out at night. The ability to customise the **T4F™** offers retention. However the **T4F™** needs to be regularly re-molded to assist dental changes.

Use after fixed appliances as an IMMEDIATE retainer. It also can be used as an interim retainer after Phase I treatment. It is particularly good for maintaining a Class II correction as well as retaining the dental alignment. Some difficulty occurs with open bite or minimal overbite cases in fitting. It is best to apply the **T4F™** in cases with a positive overbite. It will also assist in deep bite correction.

After de-banding, preferably take study models* for future reference, fit the **T4F™** following the instructions described. The models are not required for fitting the **T4F™**.

The single arch version of **The T4F™**, **The T4U™ Universal TRAINER** may also be used with a lower fixed retainer.

**Use is one hour
(minimum)
daily plus
overnight while
sleeping**

**The single arch
version, T4U™,
may also be
used with a
lower fixed
retainer**

FITTING INSTRUCTIONS FOR THE T4F™

T4F™ The Functional TRAINER is a NEW SEMI-MOULDABLE myofunctional retainer and positioner. It has a number of different applications in orthodontic treatment. Like any new appliance it will take a little time to become familiar with its fitting and use. It is best to use it in the most common applications first. A single arch version, the **T4U™** is also available.

“DIRECT” CUSTOMISING of The Functional TRAINER™

First instruct the patient about the procedure. That is, they need to bring the mandible into a Class I position **bite down as hard as possible** and hold for 20 seconds. You need to reinforce this so a correct impression is created in the **T4F™**

HEATING The Functional TRAINER™

IMPORTANT: The T4F™ must be fully heated for the customisation procedure to be successful.

- **Using freshly boiled water:** Place the **T4F™** into a small vessel of boiled water (95°C) for 1-2 minutes.
- **Using boiling water on a stove:** Place the **T4F™** into boiling water (100°C) for 30 - 45 seconds.
- **Using microwave:** Heat tap water in microwave for 2 minutes (to about the same temperature as you would have a hot cup of coffee). Check temperature is close to boiling. Place the **T4F™** into the hot water and microwave at maximum setting for a further 1 minute.

Immediately remove from the water by grabbing the tongue tag with tweezers. Cool the labial surface of the **T4F™** by dipping into cool tap water for **less than one second** only. Then without delay hold at distal end to prevent “fingerprinting” outer surface and adjust arch width approximately to the patient's inter-molar width by pushing in at the distal ends. Immediately place into the mouth, tongue tag up. This is like doing an impression. It must be quick or the heated outer surface will cool and go hard again.

The **T4F™** is placed firmly into the upper arch first with the centreline mark corresponding to the dental centreline. Fully seat the **T4F™** in the upper arch quickly with firm pressure upwards at the premolar area, **just like taking an impression**. Once fully seated in the upper, have the patient bring the mandible forward into the lower tooth channel of the **T4F™**. Instruct the patient to place the tongue against the tongue tag and with lips closed **“suck in strongly”** while biting **“as hard as you can”** to fully seat the **T4F™**. Instruct the patient to hold biting pressure for 20 seconds. Push in and mould the upper and lower labial flanges through the lips and cheeks for an optimum fit. **This entire procedure should take no more than 1 minute.** A poor fit can result if fitting is too slow as the thermoplastic outer material cools. The whole procedure must be completed in a similar time as taking an impression.

Remove the **T4F™** from the mouth and immediately cool for 10 seconds under tap water. Continue to cool at room temperature for a further 1-2 minutes, then replace the **T4F™** into the patient's mouth to check for fit. Check for good

**FITTING
The Functional
TRAINER™**

**CUSTOMISING
The Functional
TRAINER™**

**HEATING
The Functional
TRAINER™**

**“suck in
strongly” while
biting “as hard
as you can”**

impression of upper and lower anteriors. Do not be concerned if a complete impression of the lower arch is not present. A good impression must be present of all the upper arch as the **T4F™** is retained by the upper arch.

Repeat the fitting procedure if the retention is not sufficient or upper teeth have not made an adequate impression in the T4F™.

NOTE: retention will improve over the next 24 hours due to slight shrinkage.

Deep bite cases will have minimal posterior contacts. This will help to open the bite and level the plane of occlusion. Open bite cases will have less anterior impression. The **T4F™** is not suitable for open bites of more than 2-3mm. If you have problems getting a good impression (which happens if the patient does not bite hard enough in the customisation stage) use the indirect (on model) moulding method.

Fit additional retainers like 3-3 fixed lower if there is particular concern about stability or compliance. It is advisable to take study models in addition to fitting the **T4F™** as a precaution against loss or non compliance.

FITTING INSTRUCTIONS FOR THE T4F™ using a model

Some patients, particularly children, experience difficulty biting hard enough to get a good impression in the T4F™. Although it takes a little longer to do, the “indirect method” with a model overcomes this problem and gives you a better fit. The use of the following method is indicated in these cases.

“INDIRECT” CUSTOMISING of The Functional TRAINER™

Take either an upper or both upper and lower impressions to create working model(s). Often it is only necessary to have an upper model, as this is the major area where retention is needed. The lower can be customised in the mouth if preferred.

Put the model into boiled water in a separate bowl for 3 minutes before heating the **T4F™**. Using freshly boiled water, place the **T4F™** in another bowl to soften for 1-2 minutes. Remove the model and **T4F™**, then mould the **T4F™** (hot) to the upper model (hot). Mould the upper buccal and lingual flanges. It is best to use gloves so as not to fingerprint the outer surfaces. It also stops you burning your fingers. Ensure when you place the **T4F™** over the model you **push it up and back** (just like an upper impression) to minimise the anterior labial thickness. Then, cool the **T4F™** with water from the tap while continuing to hold it tightly on the model for 1 minute. This procedure should result in an excellent fit.

The lower part can then be heated in boiled water at the chair side to mould the lower surface to the desired bite. Do not to re-heat the upper or retention will be lost. However, if the fit is not as required re-heat and reseat the upper as well. Ensure you remind the patient to “bite together HARD and hold for 20 seconds.” Light biting pressure will not give a good lower impression. Cool

Deep bite cases will have minimal posterior contacts

Using a model

Indirect customisation of the T4F™

under tap water and the fitting is finalised.

As only the lower is hot and you already have moulded the upper it is a lot easier. A touch of cool water on the outer surface before placing in the patient's mouth helps to keep the soft tissue comfortable in the moulding procedure

“INDIRECT” CUSTOMISING of the T4F™ using articulated models

Take upper and lower impressions and a bite with a 2mm gap between the anteriors in Class I or edge to edge position. Mount on a Galetti or another articulator. It is best to then put it all into boiled water as previously described for 3 minutes. You will need a big bowl... careful of the hot articulator... gloves needed for this.

Use the above moulding procedure pushing the T4F™ up and back into the upper model then close the articulator forcing the models together with maximum force. Continue to adapt the labial and lingual flanges to the model. Immediately cool under running tap water for 1 minute still holding tight on the model. Repeat the procedure if fit is not as desired. Trim the distal ends as required. You now have a fully articulated functional appliance. Minor fit changes can be still made chair side by re-heating and placing in the mouth. Normally this is not needed.

Minor dental correction can be made by cutting misaligned teeth off the model, then re-setting to ideal position using modelling wax. After this is completed, duplicate the model(s). The procedure for moulding the T4F™ is then as above. This is a good method for detailing the alignment after treatment, or after minor relapse.

Adjust with a Delco red stone. To restore shine to outer surface give the appliance a quick wipe with cotton swab using a small dab of chloroform.

The T4F™ acts like an Activator, Bionator or Biobloc III, as well as a retainer. It is retained in the upper arch while re-positioning and locking in the lower into Class I. This is why there is less material for moulding in the lower tooth channel. In addition to these applications the T4F™ is a myofunctional TRAINER to actively retrain the tongue as well as all the other TRAINER features. It will not break and can be refitted many times. It is also a low cost functional appliance.

The Functional TRAINER™ works on both a Myofunctional and a Retainer level.

Therefore control of destabilising muscular forces allows the patient to be free of day time retention. Also Class II correction is maintained both structurally and myofunctionally. This is not possible with many other retainers which can interfere with correct muscular and tongue function.

NOTE - Retention tends to improve with slight shrinkage occurring after 24 hours. Areas of irritation (distal flanges like a denture) can be trimmed with an acrylic or stone burr. Air holes can be made with an acrylic bur if necessary

**Indirect
customisation
of the T4F™
using
articulated
models**

**The T4F™
works on both
a
Myofunctional
and a Retainer
level**

(usually not required).

The Functional TRAINER™ is used one hour daily plus overnight. Ensure the patient understands that non compliance will result in relapse. However, as the **T4F™** maintains correct dental alignment and it will act as a positioner if minor tooth movement occurs.

DO NOT USE THE T4F™ WITH NON COMPLIANT PATIENTS

The Functional TRAINER™ can be used with upper and lower anterior retainers if compliance or stability is poor. As it can be remoulded any number of times it can be moulded on articulated final models* if any relapse occurs. It can also be moulded into progressive treatment positions by resetting the teeth and jaw position in the laboratory. Like a classic Positioner.

The Functional TRAINER™ has an inner core material that has some memory like light arch wire. Minor dental alignment will occur by remoulding every 3-4 weeks. If the arch form is good this can be useful for the patient who has had Phase 1 treatment and is not ready or does not want fixed appliances. This use of the **T4F™** is decided on a case by case basis.

**DO NOT USE
THE T4F™
WITH NON
COMPLIANT
PATIENTS**

T4U™ THE UNIVERSAL TRAINER

An immediate, customisable, multifunctional appliance for patient emergency situations just like these...

“Doctor, Johnny needs a good mouthguard for his big game on Saturday, it’s Friday today.”

“Doctor, Julie has lost her upper retainer, I’m worried her front teeth are crowding up already. I know it’s Friday afternoon but this is urgent, she can’t go the weekend without doing something.”

After those two calls all you need now is a TMJ patient in pain who won’t leave without treatment.

The T4U™ is the multipurpose appliance for just these situations and more.

Over the past 10 years Myofunctional Research Co. has developed a series of orthodontic Trainers and TMJ appliances. Their latest appliance, **The T4U™** is designed for the emergencies that typically occur on Fridays and any other day for that matter. Using new semi-mouldable technology the **T4U™** is a universally sized upper retainer or splint that can be fitted in 2 minutes with a snap in fit as good as the best vacuum formed splints. It is easy to set a repositioning bite or just a good occlusion for a retainer, mouthguard or occlusal splint. It can also be set for a flat plane occlusion. It is what every Dental office needs for immediate treatment of daily emergencies and also routine procedures like an immediate orthodontic retainer after debanding or a TMJ splint for a heavy bruxer. It doubles as one of the best mouthguards you can issue for less time and money than any laboratory can offer.

The **T4U™** is a **Universal** tool 4 use in your practice. Make sure you have a few on hand before Friday.

Applications

Immediate single arch retainer

The most common application of the **T4U™** is that of an immediate upper retainer in conjunction with a 3-3 lower retainer. It can be fitted as soon as the brackets are removed and can be customised to a pre-determined bite to maintain a Class II correction. It has similar use to the **T4F™** but with less Class II correction. It can be used after a “functional” appliance for maintenance of a Class II correction following appliances like a Clark Twin Block, a Bionator or a Biobloc Stage III. The **T4U™** is immediate, less expensive, requires no external lab work, and does not suffer breakages like other retainers. With the inbuilt myofunctional training of the tongue tag, tongue guard and the lip bumpers, soft tissue re-training is performed similar to the **T4K™,B** and **F**. That means less daytime use is required. It can be repeatedly re-customised as the dentition changes. It also doubles as a high quality mouthguard at no extra cost.

An immediate, customisable, multifunctional appliance for patient emergency situations

The T4U™ is a multipurpose appliance

APPLICATIONS

Immediate single arch retainer

Myofunctional TRAINER

Not as good as the **T4K™** or the **T4F™** for myofunctional habit correction, but the **T4U™** has the advantage for the non compliant patient who will not use the other appliances. It stays in better at night and is more useable during the day. For myofunctional training and retaining, it requires the least compliance.

Hard occlusal/TMJ splint

The TMJ Appliance is the treatment of choice for the immediate treatment of the symptoms of TMD. However some practitioners prefer a hard splint with or without mandibular repositioning. Heavy bruxers often wear through a soft splint and the **T4U™** can be used in the upper or lower arches, just as effectively with missing teeth. It can be moulded to flat plane or repositioning occlusal relationships. It is also an immediate splint that can be fitted at the first consultation visit, or customised in the laboratory to increase the treatment fee with the expense of a lab bill.

Active Positioner for minor dental corrections

After Phase I treatment or fixed appliances, minor dental misalignments can be corrected with the **T4U™** in the upper arch in a similar way as with the **T4F™** without the expense of making a positioner. Minor dental relapse can also be treated in the same manner, for example, when upper laterals move forward of the centrals.

The dental correction can be made by cutting misaligned teeth off the model with a fine (crown and bridge) saw. The teeth are then re-set to ideal position using modelling wax. After this is completed, duplicate the model(s). The **T4U™** is then moulded by the indirect method on the new model. This can save the necessity for further treatment. This is the most convenient method for detailing the alignment after treatment, or after minor relapse.

Sports Mouthguard

Because of the harder inner core of the **T4U™** it makes a mouthguard with a superior fit like a vacuum formed lab made one. Also the impact resistance of the dual lamination is second to none. The **T4U™** give the best impact resistance of any mouthguard. See information on Shock Transfer Core (STC) technology in our website <www.myoresearch.com>. It can be fitted directly to the patient or indirectly using a model.

Myofunctional TRAINER

Hard occlusal/ TMJ Splint

Active Positioner for minor dental corrections

Sports Mouthguard

FITTING INSTRUCTIONS for the T4U™ Universal TRAINER

The T4U™ is a NEW SEMI-MOULDABLE Multi-functional Retainer/Splint/Mouthguard. It has many potential uses in the Dental and Orthodontic Practice. Like any new appliance it will take a little time to become familiar with its fitting and use.

HEATING The Universal TRAINER™

IMPORTANT: The T4U™ must be fully heated for the customisation procedure to be successful.

- **Using freshly boiled water:** Place the T4U™ into a small vessel of boiled water (95°C) for 1-2 minutes.
- **Using boiling water on a stove:** Place the T4U™ into boiling water (100°C) for 30 - 45 seconds.
- **Using microwave:** Heat tap water in microwave for 2 minutes (to about the same temperature as you would have a hot cup of coffee). Check temperature is close to boiling. Place the T4U™ into the hot water and microwave at maximum setting for a further 1 minute.

Immediately remove from the water by grabbing the tongue tag with tweezers. Cool the labial surface of the T4U™ by dipping into cool tap water for **less than one second** only. Then without delay hold at distal end to prevent “fingerprinting” outer surface and adjust arch width approximately to the patient's inter-molar width by pushing in at the distal ends. Immediately place into the mouth, tongue tag up. This is like doing an impression. It must be quick or the heated outer surface will cool and go hard again.

The T4U™ should be placed in the upper arch with the centreline mark corresponding to the dental centreline. Quickly fully seat the T4U™ in the upper arch with firm pressure upwards and backwards at the premolar area, just like taking an impression. Adapt the upper labial surfaces by pushing in hard towards the maxillary arches. Once fully seated in the upper, have the patient bring the mandible forward into the desired bite, and bite hard in this correct position. (note if minimal lower occlusion is required allow the lower surface to cool before the bite stage. Ensure the upper arch is still fully seated. Instruct the patient to place the tongue against the tongue tag and “suck in”. Hold biting pressure for 20 seconds. **This entire procedure should take no more than 1 minute.** A poor fit can result if this fitting procedure is too slow as the thermoplastic outer material cools. The whole procedure must be completed in a similar time as taking an impression.

Remove from the mouth and immediately cool for 10 seconds under cool tap water. Allow to cool out of the mouth for a further 1-2 minutes, then place the T4U™ into the patient's mouth to check for fit. Check for good impression of upper dentition.

Repeat the fitting procedure if the retention is not sufficient or anterior teeth have not made an adequate impression in the T4U™.

NOTE - Retention tends to improve with slight shrinkage occurring after 24 hours improving the fit. Areas of irritation (distal flanges like a denture) can be trimmed with an acrylic or stone burr.

FITTING THE UNIVERSAL TRAINER™

The T4U™ must be fully heated

Repeat the fitting procedure if the retention is not sufficient or anterior teeth have not made an adequate impression in the T4U™

FITTING INSTRUCTIONS FOR THE T4U™ using a model

Some patients, particularly children, experience difficulty biting hard enough to get a good impression in the T4U™. Although it takes a little longer to do, the indirect method with a model overcomes this problem and gives you a better fit. The use of the following method is indicated in these cases.

Indirect customisation for the T4U™

Take either an upper or both upper and lower impressions to create working model(s). Usually only an upper model is needed.

Put the model in boiled water in a separate bowl for 3 minutes before heating the T4U™. Using freshly boiled water place the T4U™ in another bowl to soften for 1-2 minutes. Remove the model and T4U™, then mould the T4U™ (hot) to the upper model (hot). Mould the upper buccal and lingual flanges. It is best to use gloves so as not to fingerprint the outer surfaces. It also stops you burning your fingers. Ensure when you place the T4U™ over the model you push the T4U™ up and back (just like an upper impression) to minimise the anterior labial thickness. Then cool it with water from the tap holding tight on the model for 1 minute while still on the model to get a fantastic fit.

The lower part can then be heated in boiled water at the chair side to mould the lower surface to the desired bite. Do not re-heat the upper or the great fit will be lost. However, if the fit is not as required re-heat and reseat the upper as well. Ensure you say to the patient, "bite together HARD and hold for 20 seconds". Light biting pressure will not give a good lower impression. Cool under tap water and the fitting is finalised.

As only the lower is hot and you already have moulded the upper it is a lot easier. A touch of cool water on the outer surface before placing in the patient's mouth helps to keep the soft tissue comfortable in the moulding procedure.

Using articulated models

Take upper and lower impressions and a bite with a 2mm gap between the anteriors in class I or edge to edge position. Mount on a Galetti or another articulator. It is best to then put all in boiled water as above for 3 minutes. You need a big bowl. If not possible the process will still work. Careful of the hot articulator. Gloves needed for this.

Use the above moulding procedure pushing the T4U™ up and back into the upper model then close the articulator forcing the models together with maximum force. Continue to adapt the labial and lingual flanges to the model. Immediately cool in running tap water for 1 minute still holding tight on the model. Repeat the procedure if fit is not as desired. Trim the distal ends as required. You now have a fully articulated functional appliance. Minor fit changes can be still made chair side by re-heating and placing in the mouth. Normally this is not needed.

Minor dental correction can be made by cutting misaligned teeth off the model, then re-setting to ideal position using modelling wax. After this is completed,

Using a model

Indirect customisation using the T4U™

Using articulated models

duplicate the model(s). The procedure for moulding the T4U and T4F is then as above. This is a good method for detailing the alignment after treatment, or after minor relapse.

Adjust with a Delco red stone and to restore shine to outer surface of the T4U use a small dab of chloroform and give the appliance a quick wipe with cotton swab.

**Minor dental
correction**