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## SAVE THE WORLD TWICE A DAY

Sure, saving the world is a pretty ambitious, but you have to start somewhere. Why not with your own mouth? Because unfortunately, in order to keep up with our oral hygiene needs, humans generate a whole lot of trash!

Toothbrushes need to be replaced every two to three months. In Germany (TIO's home country) alone, about 190 million toothbrushes are used and discarded each year. That's 5700 metric tons of plastic waste being generated yearly just from toothbrushes and their packaging. This simple yet wasteful consumer product was our starting point. What we came up with is an environmentally-friendly solution for optimal dental care – and possibly the most holistic toothbrush in the world.

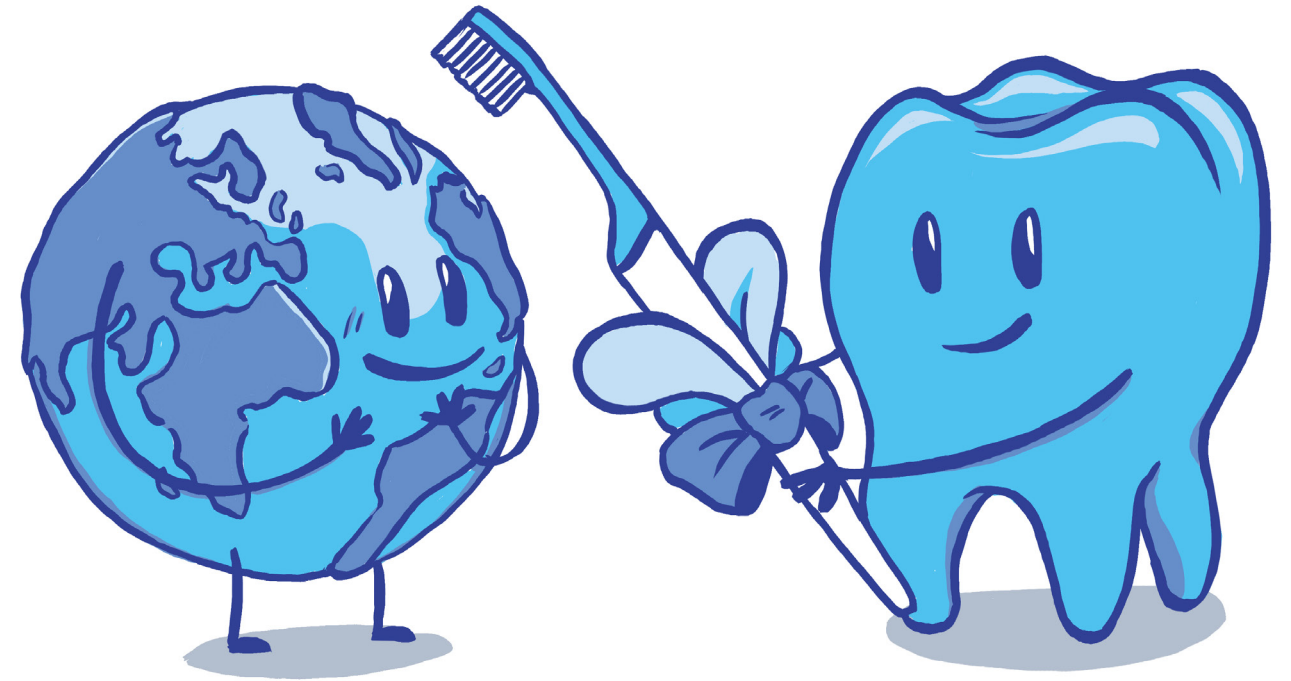
The exchangeable brush heads cut down on waste by up to 70%, since the handle can simply continue to be used with each new head. The materials we use are all made from renewable resource-based bioplastics. This approach means TIO offers a 166% lower carbon footprint and global warming potential than conventional toothbrushes.

Our completely vegan local manufacturing process allows us to completely forego the usual toxic plasticizers. But our sustainable approach doesn't mean sacrificing design quality. On the contrary, the TIO toothbrush follows a holistic design approach that is distinguished by a simple, iconic profile and a striking color scheme.

The TIO toothbrush does one thing exceptionally well: cleaning teeth! Our innovative toothbrush was developed in close collaboration with the leading dental specialist at the the University of Witten/Herdecke, Dr. Stefan Zimmer, and incorporates the latest research in the field of dentistry. The brush head is flat, with a wavelike profile made up of bristles of varying lengths, each of which is

rounded off at the tip. This way, even the difficult to reach interdental spaces are easier to reach, providing exceptional cleaning results.

Even so, a toothbrush is only as effective as its owner! In practice, it comes down to how well you brush. The right tools, sufficient cleaning time, and a fine-tuned brushing technique can make all the difference. The TIO Cleaning Guide will show you how to make sure your teeth are as clean as they can be!



# THE FLORA AND FAUNA OF ORAL HYGIENE

## Your wild oral flora versus your inner sloth.

There's a lot going on in the human mouth! Joining forces with biofilm and plaque, countless microorganisms, bacteria and yeasts happily colonize our oral cavity. But don't panic: Many of these tiny creatures protect us from harmful germs that would also love to make their home in our mouth. However, not all of these microorganisms are so well-intentioned. Some of them can even be harmful. But because they are all in constant territorial competition with each other, our oral flora usually remains quite neutral and balanced.

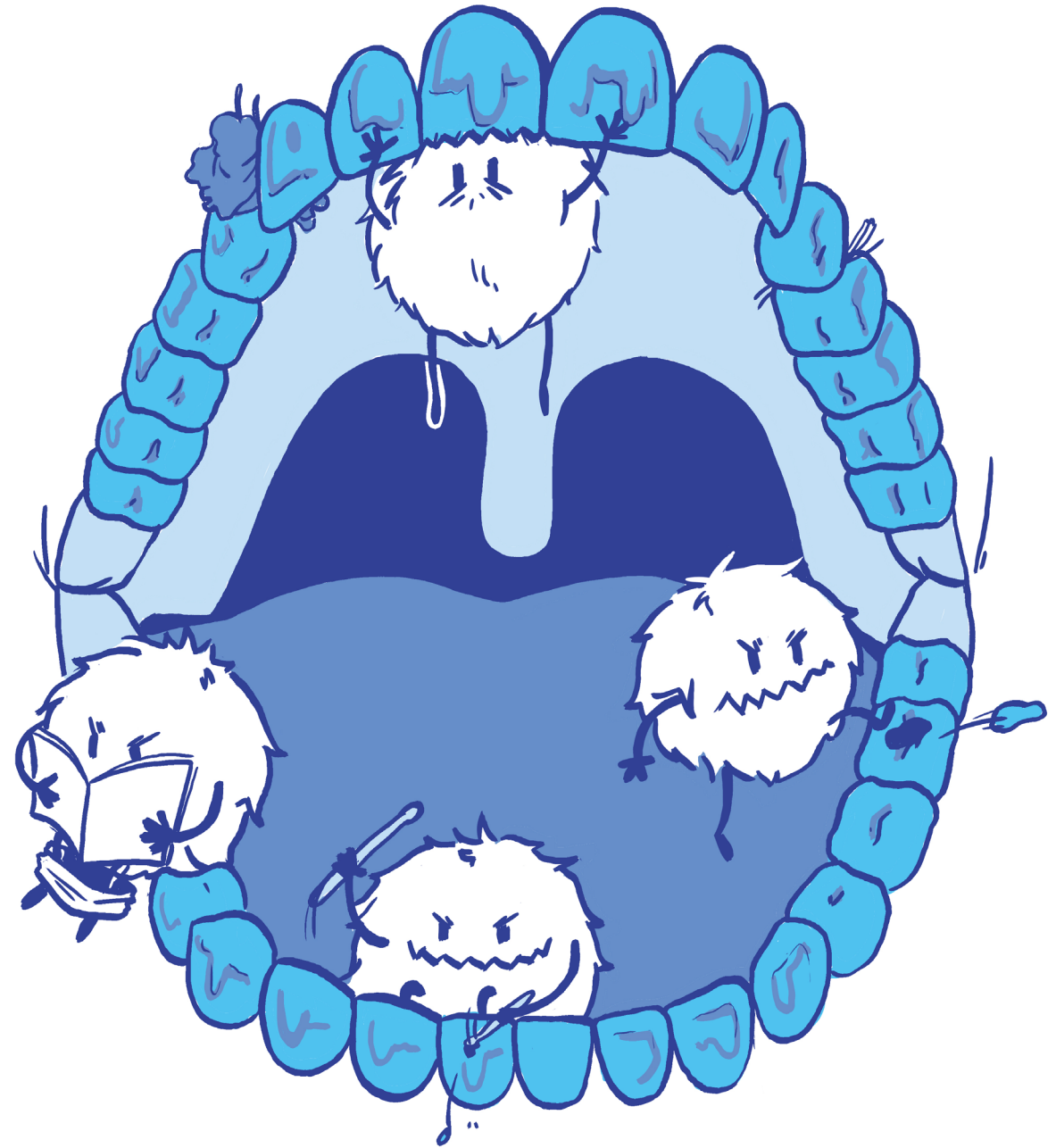
Ingestion of food can sometimes throw off this delicate balance. Eating facilitates the growth of harmful bacteria that feed off low molecular carbohydrates that are most often found in sugary foods. It really doesn't take much for uninvited guests to make themselves at home in our mouth. They excrete acids that attack our teeth, which causes minerals to be leached out of the enamel, leading to the formation of cavities. Luckily, our saliva repels these destructive bacteria in an effective, natural way: It contains valuable mineral salts that can help neutralize acids. In this way, our body provides its own tools for remineralization, promoting the hardening and resilience of our dental enamel.

Despite these natural advantages, our own behaviour often ends up getting in the way. More often than not, the periods between meals are not long enough for this natural demineralization to run its course. A late breakfast, coffee and cake, the occasional snack – many of these habits prevent our body from taking full advantage of its natural safeguards. What's more, these minerals permeate and collect in plaque, allowing it to accumulate on rough spots on our teeth. The longer plaque remains undisturbed, the harder it becomes. Combined with the minerals from

our saliva, plaque becomes stubborn tartar, which is very difficult to remove.

But that's not enough for the noxious biofilm bacteria – they also love to attack the gums. Gingivitis is when bacteria penetrate deep into the gums, potentially causing permanent damage to the natural periodontal apparatus. In the worst cases, this condition known as periodontitis can cause teeth to loosen and fall out. Not very pleasant.

However, the biggest threat to healthy oral flora and bacterial equilibrium is an especially dangerous beast: the inner sloth, who just loves to mess around with our daily routine. The sloth is not at all concerned with diligent care of our teeth. He would rather get five extra minutes of sleep every morning, and just halfheartedly swipe the toothbrush around the mouth a bit. In the evening the sloth usually has very specific plans for us, none of which have anything to do with rigorous dental care. But it is definitely possible to tame the inner sloth: A good knowledge of our the oral flora, a deliberate approach to our oral hygiene, and (last but not least) the perfect toothbrush are the best tools for the job!



## A GREEN THUMP FOR THE MOUTH

**Our oral flora need meticulous care, like a beautiful garden.**

Our entire oral cavity is in grave danger. Most notably its glittering flagship, our teeth, faces new challenges every day. In order to keep boldly biting, we must protect them at all costs. Unfortunately our body can't do it alone, but with thorough tooth cleaning we can take control of our own oral care!

Practiced and proper cleaning allows us to remove plaque manually, before it becomes hardened tartar and begins driving away vital bacteria. And while we're at, we polish the surface of the teeth as well. This makes things too slippery for bacteria: The smoother the surface, the harder it is for harmful bacteria to accumulate. And while brushing takes care of one bacterial hiding place, doing a thorough job of it also removes food residues, which can be a particularly attractive breeding ground for bacteria also. The right toothpaste will take care of the rest: Its active ingredients help remineralize dental enamel.

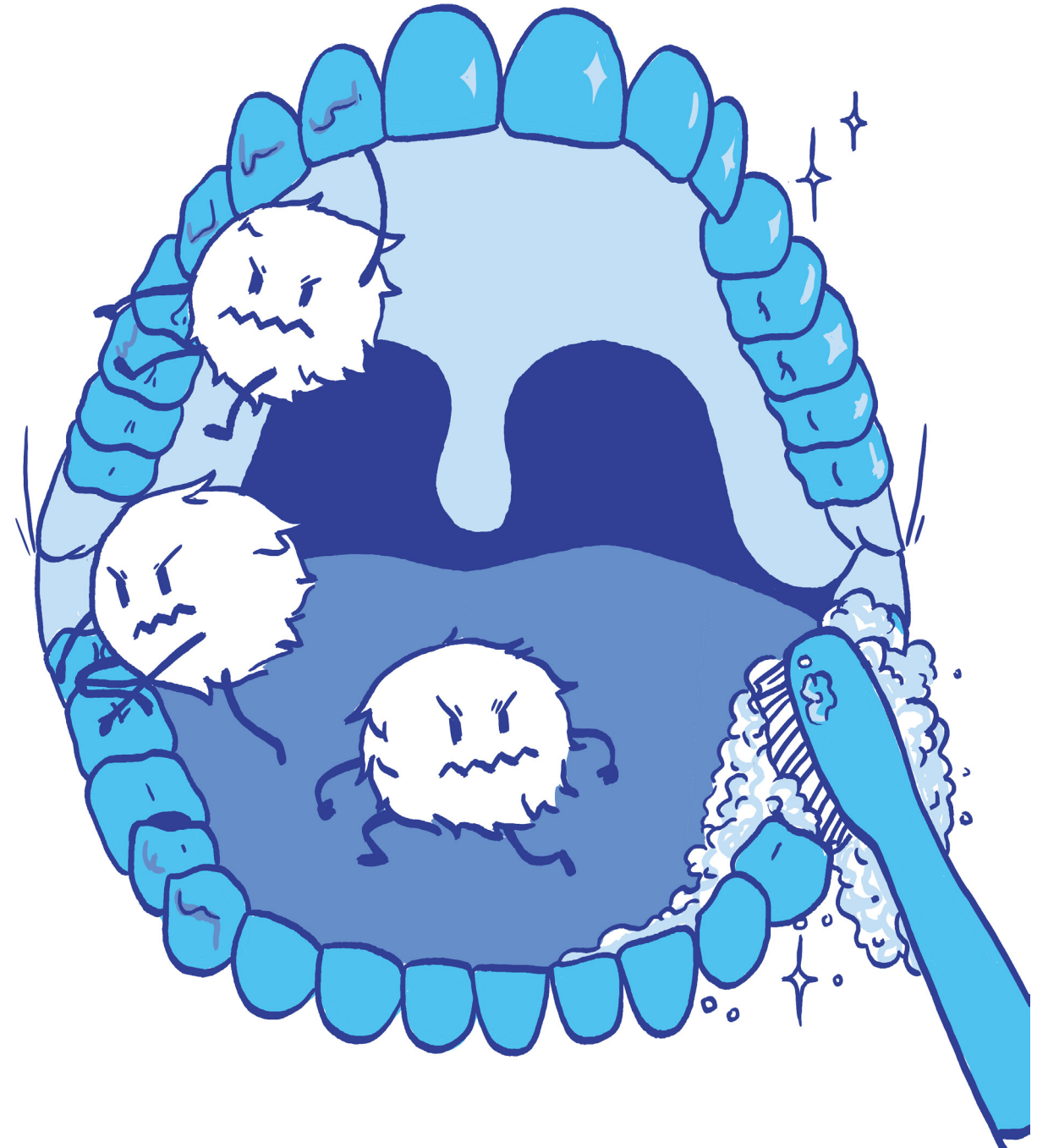
It's always a good idea to pay close attention to what's in our toothpaste. The best ones contain active ingredients that both preserve dental health and prevent calories and gingivitis. These pastes and gels consist primarily of abrasives, foaming and wetting agents, and moisturizers. Flavoring agents are also normally added, as well as preservatives and other food additives that do not directly contribute to dental hygiene.

A good alternative to conventional toothpaste is Dent-tabs – tooth cleaning tablets based on natural ingredients, without any added preservatives, antibacterial agents, stabilizers or similar chemical additives. But exactly which cleaning product is right for your particular oral flora is up

to you. Any questions or doubts can be cleared up with a recommendation from your dentist.

Speaking of which, it's important to remember that we should not try to battle these harmful bacteria all on our own. Visiting the dentist is something nobody really loves to do, but it can make a big difference in maintaining sound oral hygiene. Everyone should pay their dentist a visit at least once yearly, but those of us with increased health risks should get a check-up every six months. Regular professional tooth cleaning is also essential – one to four times per year, or as advised by your dentist.

One thing the dentist cannot help us with, however, is eating right. We have to do that ourselves. All foods that must be thoroughly chewed, such as whole-grain bread and raw vegetables, are very good for the teeth. Such chewing promotes saliva production, which in turn helps clean the teeth and keep them sound. This is the best way to promote the natural remineralization process. Of course, we all allow ourself the occasional sugary treat. What's important, though, is maintaining a generally balanced, sensible diet that gives the oral flora a chance to regenerate. And of course, that we remember to brush at least twice per day!



## THE LONG AND SHORT OF IT

**When it comes to brush heads and bristles, it's all about proportions.**

Round or oval head, bristles of the same or varying lengths, flexible or rigid plastic: Drug store shelves really have become cluttered with chaos and confusion lately. Every toothbrush is desperately vying for our attention, often relying on garish designs and allegedly innovative features. However, we shouldn't let ourselves be won over by bright colors and fancy packaging when buying a toothbrush. The deciding factor should never be how great it will look next to the bathroom sink, but rather that it will help keep our oral flora balanced and our teeth well cared for. Drawing on recent research findings from the field of dental medicine, a number of features have been identified as indispensable for a truly effective toothbrush. The most crucial among them: brush head and bristle configuration.

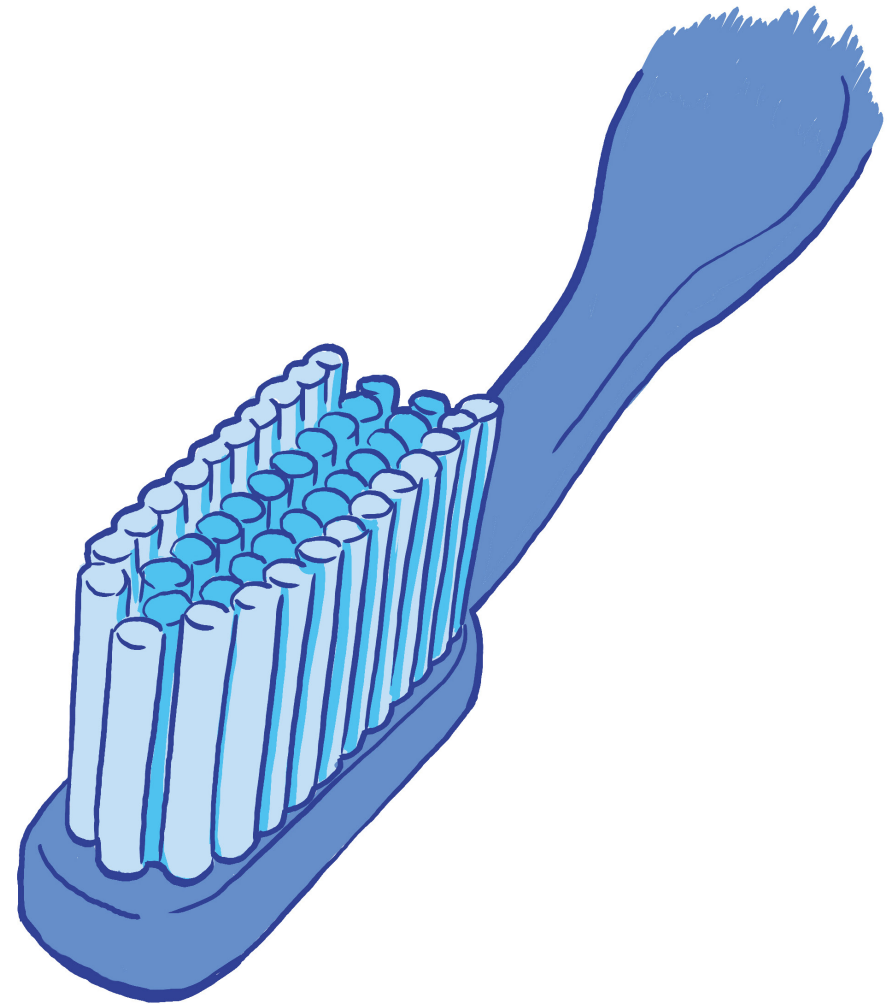
Brush heads with bristles of varying lengths can be especially efficient: The longer bristles reach down into the interdental gaps, while the short bristles polish the surface of the teeth. Ideally, each individual bristle has a rounded tip, which helps prevent damage to the gums.

Overly hard bristles can also increase the risk of damage, despite offering better overall cleaning results and plaque removal. On the other hand, softer bristles help care for the gums but cannot offer the cleaning power of their rougher counterparts. Consequently, everyone must decide for themselves which sort of bristles best suit their needs: Brushers with plenty of plaque and resilient gums should opt for hard bristles, while those of us with sensitive gums and generally balanced oral hygiene are better off going with something softer. In the end, most people end up choosing medium bristles as a compromise.

When selecting a brush head, however, we should all follow the same advice: Try to choose a flat, even profile, to ensure that the toothbrush can easily reach all areas of the mouth. Also, small tends to be better in this case. That way, the brush can move agilely and even easily clean the backsides of the rear molars.

TIO incorporates all of these attributes. Working closely with the leading professor at the University of Witten/Herdecke, Dr. Stefan Zimmer, we developed a toothbrush that meets all the requirements for perfect tooth cleaning: A flat brush head and rounded bristles of varying lengths.

Keep in mind that even the perfect toothbrush is only effective when the necessary cleaning time is diligently adhered to. A recent Germany-wide study run by the University of Witten/Herdecke found that the minimum recommended brushing duration of three minutes is rarely reached. In such cases, a larger brush head may actually be advantageous – purely for its ability to clean more overall tooth surface in the same amount of time. But for truly optimal results, effective cleaning with a smaller brush head and a longer brushing duration is recommended. Those three minutes really are a “must”.



## IT'S ALL IN THE TECHNIQUE

**Brushing your teeth isn't a science, but there are a few helpful rules.**

Believe it or not, some people really do brush their teeth after every meal! Although such a routine is probably not realistic for everyone, we should all be brushing our teeth every morning and evening at a minimum. After consuming sour foods like fruit or juice, however, it is best to wait half an hour before brushing. The acids contained in such foods soften the enamel temporarily, during which time it's possible for brushing to do more harm than good. Plus, as every child knows, toothpaste tastes really strange after a glass of juice!

Regardless, it is important not to get lazy about the "twice a day" rule for healthy oral hygiene. Our teeth really have earned a few minutes of our attention each morning and evening. How many minutes? Ideally never less than three, but five minutes would be better, and a diligent seven minute scrubbing is definitely to be commended!

Since they get so much daily use, our toothbrushes really must be replaced every two to three months. Otherwise, all sorts of bacteria are likely to collect and multiply on and between the bristles. Cultivating such a thriving menagerie on your toothbrush is definitely not recommended! Even after getting over a cold it is advisable to swap your old brush for a new one, since the odd germ may still be hanging around.

Cleaning teeth is so easy, even a child can do it – or so we think. Whisking the toothbrush quickly and halfheartedly over the teeth just won't cut it. Of course, the age of the brusher really is significant.

Due to small children's underdeveloped fine motor skills, we must accept that they can't do a perfect job brushing.

Senior citizens can also have restricted motor abilities, limiting the effectiveness of the cleaning routine. But for dextrous, capable adults there's really no excuse for poor brushing!

There are three well-known tooth brushing techniques that offer superb results: Fones, Stillman and Bass. Everyone must decide which works best for them – but a quick consultation with the dentist can't hurt.



3 X PER DAY,  
5 MINUTES



2 X PER DAY,  
3 MINUTES



1 X PER DAY,  
2 MINUTES



CHILDREN AND ADULTS WITH PHYSICAL  
DISABILITIES: FONES



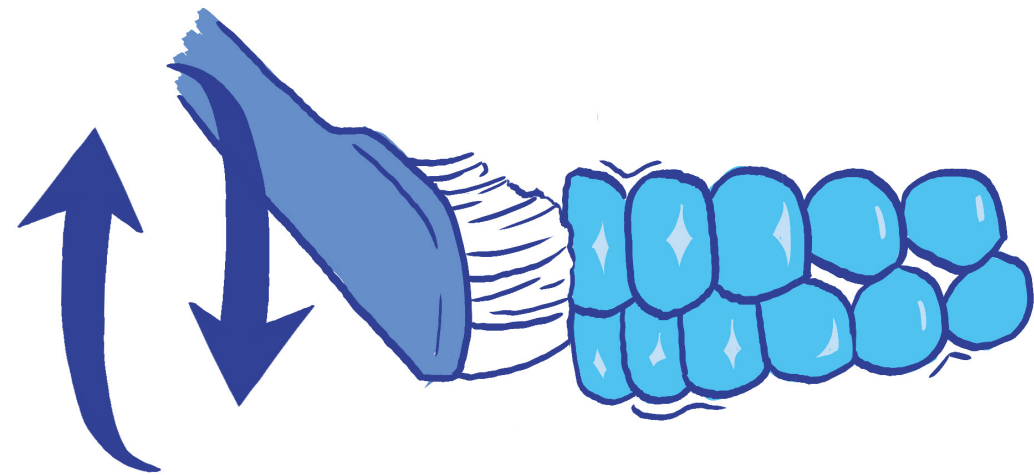
ADULTS:  
STILLMANN / BASS

## THE FONES-TECHNIQUE

The Fones technique is easy to learn, and is especially suited for young children and adults with limited motor abilities. Admittedly, this method may provide a less thorough cleaning than the Stillman or Bass techniques, since it often skips over the difficult to reach interdental spaces.

Here's how it works:

Bite the top teeth down on the bottom teeth. Then, using large circular motions and gentle pressure, brush the outside surfaces of the teeth. Of course, you will have to open your mouth to clean the inner surfaces once you are ready. Using smaller circular motions this time, brush the insides of the teeth. Make sure that both sides of each individual tooth get some dedicated attention from the toothbrush!



## THE STILLMAN-TECHNIQUE

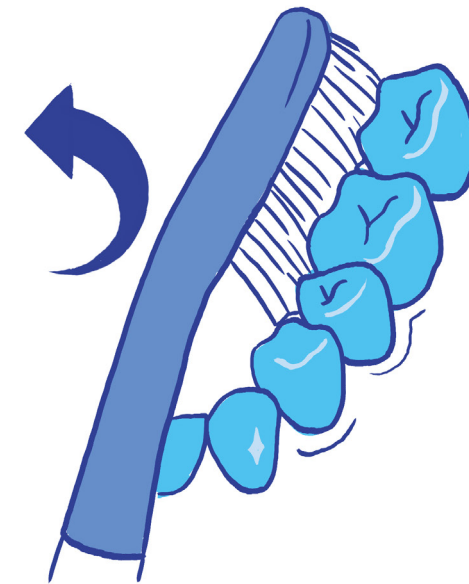
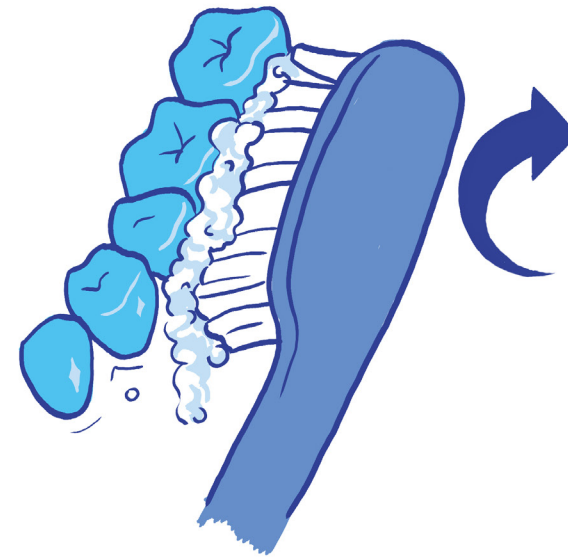
The Stillman technique uses a vibrating motion that also stimulates the gums while it cleans. This helps avoid harmful gingival recession – otherwise known as receding gums or periodontitis.

Here's how it works:

Applying light pressure, position the toothbrush at a 45° angle. Do not simply place the bristles where the teeth meets the gums, but rather directly on the gums above the teeth. Using a loose rotating motion, brush towards the tips of the teeth – always “from pink to white”. Unlike the Bass technique this method does not generally employ a jiggling movement, but with a bit of practice such motion can really complement the technique's effectiveness.

Whether your Stillman includes this jiggling or not, ensure that the inside and outside of each tooth gets polished.

And don't forget about the chewing surface of the rear teeth: They should also be scrubbed with gentle pressure in a back-and-forth motion.



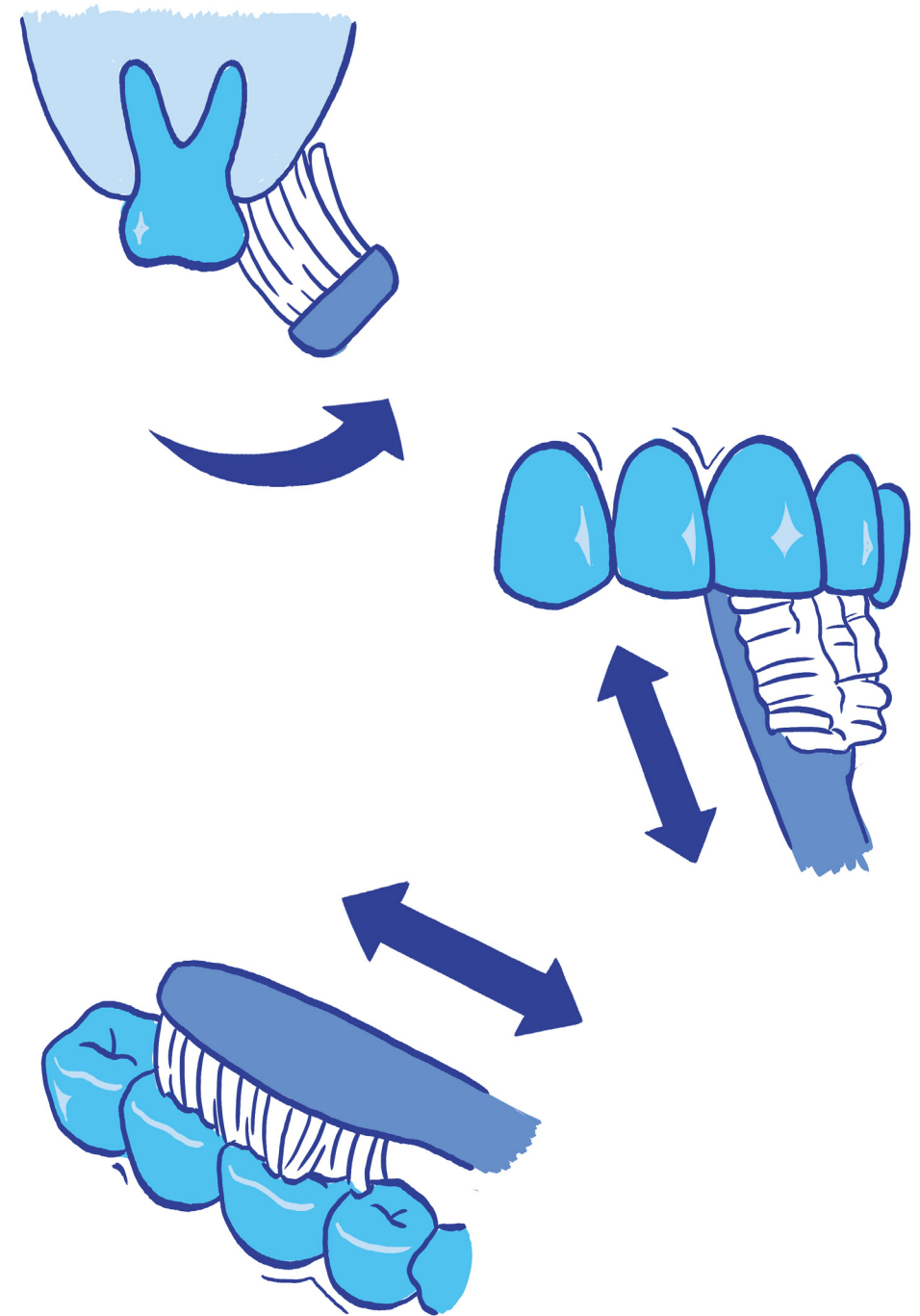


## THE BASS TECHNIQUE

The Bass technique is one of the most common yet thorough methods of tooth brushing, since it allows for effective cleaning of both the teeth and the interdental spaces. However, it can easily cause damage to the gums if too much pressure is used. This method is generally well-suited for most brushers, but it is not quite as easy to master as the Fones or Stillman techniques.

Here's how it works:

As with the Stillman technique, hold the toothbrush at a 45° angle – but instead of starting directly on the gums, position the bristles where the tooth meets the gums. Using gentle pressure, brush with small vertical or circular vibrating motion. The movements should be so small that it almost seems as if only one spot is being cleaned. Every section of one to two teeth should be carefully polished with at least ten up-and-down motions. This focused vibrating movement can effectively remove food residue from both the surface of the teeth and the interdental spaces. At the same time, the gums get gently massaged. An outwards-swiping motion towards the chewing surface should be used to move to the next section. Of course, this method should also be used first on the outside of the teeth, and then on the inside. Finally, don't forget to brush down the chewing surfaces themselves.



# A TOOLBOX FOR YOUR ORAL HYGIENE

**Aside from a good toothbrush, there are many more tools that can help with healthy teeth.**

Of course, teeth are delighted by nothing more than the perfect toothbrush – no doubt about that! But there are many other helpful little tools that can help guarantee healthy teeth and a glowing smile.

To really clean out those hard-to-reach interdental spaces, for instance, it's best to have dental floss on hand. Flossing is one of the best ways to prevent cavities and periodontitis. The thin, strong strands excel at removing plaque and stubborn food residues from the narrow gaps between the teeth. Such deposits can easily attract bacteria, leading to bleeding gums and even halitosis. And nobody wants that!

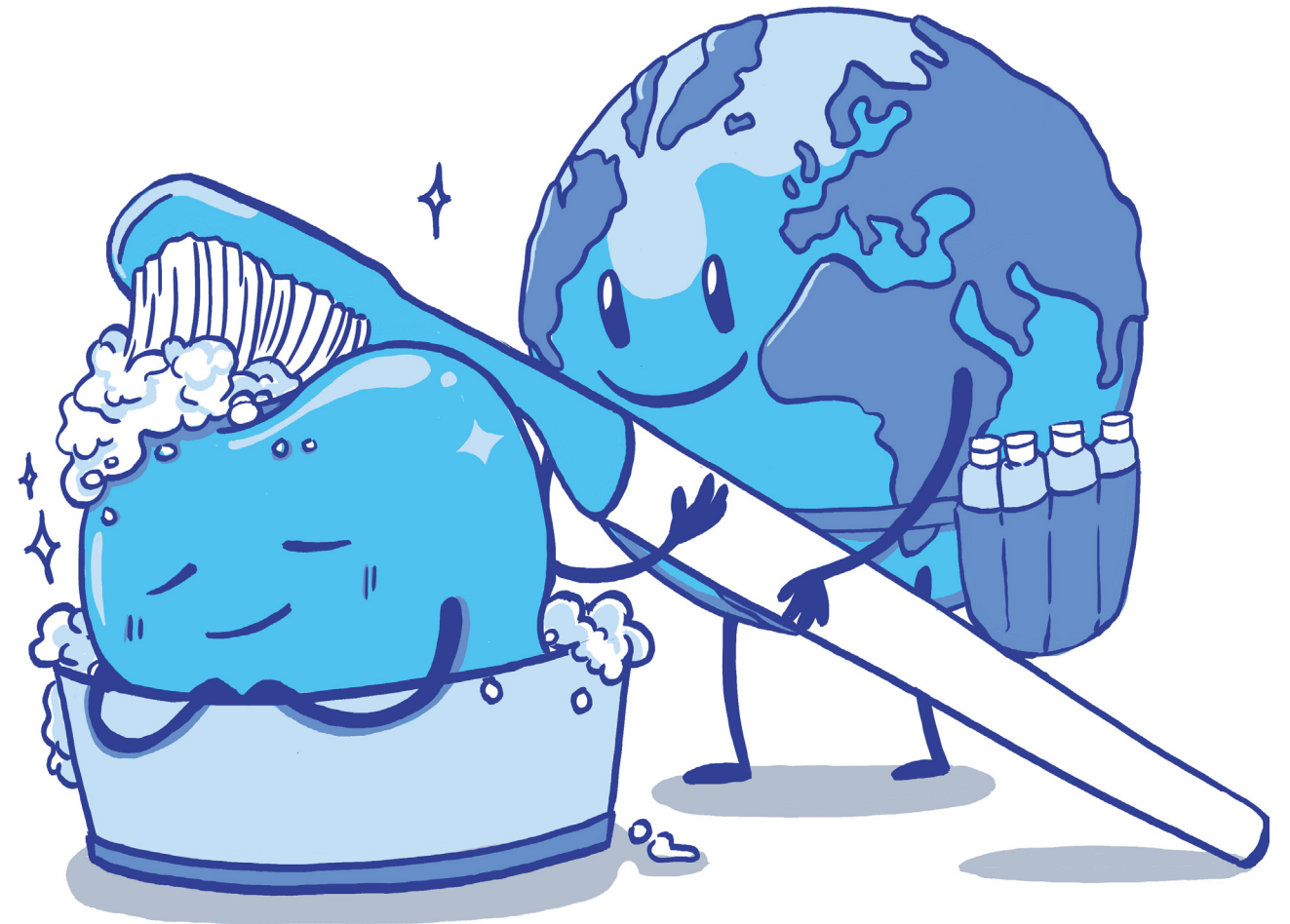
Interdental brushes are also very effective at cleaning between the teeth. These small brushes are perfect for scrubbing out hard to reach spots. Molars, for example, are much easier to clean with interdental brushes than dental floss. Since our teeth are not always as perfectly aligned as we would like, and interdental spaces can vary in width, some people may need interdental brushes of varying sizes.

Even our tongues need a good polishing sometimes! A good tongue cleaner is the perfect tool for the task. It's not necessary to scrub the entire tongue, though. Since the front two thirds of the tongue often come into contact with the gums while talking and swallowing, that area naturally tends to remain cleaner. But the back of the tongue can be a very welcoming spot for plaque and food residues! Left undisturbed, this area can become a breeding ground for bacteria and fungi, which can in turn lead to periodontitis or infection of the oral mucous

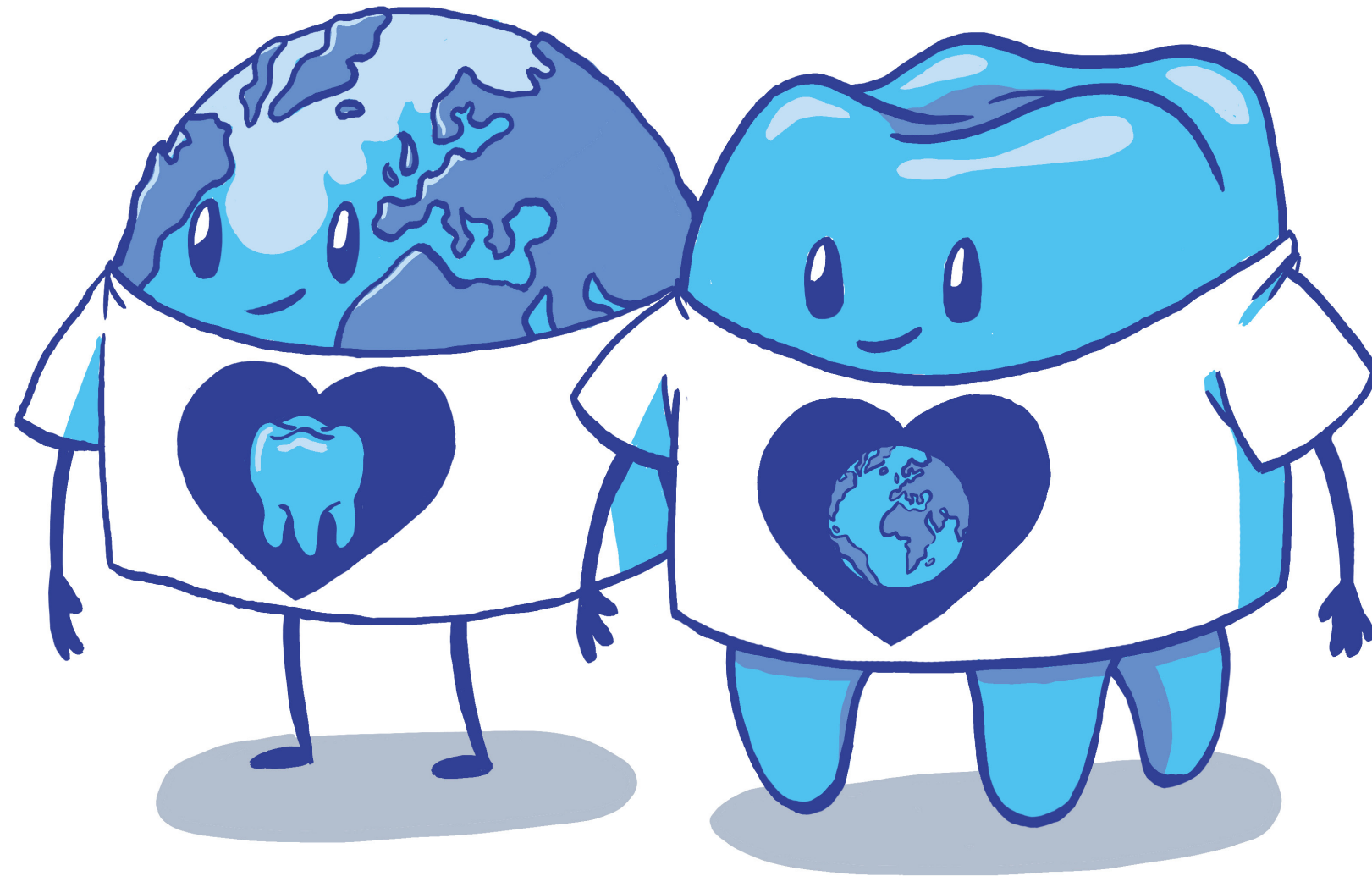
membranes. Once these conditions set in, bad breath often follows. But through regular, gentle use of a tongue scraper, these unpleasant consequences can easily be avoided.

Of course, a tried and true tool to fight bad breath is chewing gum. And if a specialized oral care gum is your chew of choice, even better! Chewing gum stimulates the salivary glands to excrete more saliva. This helps neutralize excess acids in the mouth, giving them less opportunity to damage the teeth and gums. On the other hand, sugar-loaded, colourful gum with artificial flavoring should be avoided. But you knew that already!

Making use of these tools can be crucial to optimal tooth cleaning. Even so, people tend to do without many of them. Dental floss and interdental brushes can be a bit tricky to master, after all. A simpler supplement to typical tooth brushing is the oral irrigator. Water picks, as they are also known, are easy to use for even the laziest among us – just guide the jet of water between and around the teeth. Die meisten Mundduschen sind durch einfaches Gurgeln und durch die Zähne fließen lassen anzuwenden. No advanced skills required. Just don't forget to spit!



DANKE :)



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