

Supplemental Table S3: How Orthodontists Approach Mouthguard Use; Themes and Sub-Themes Identified from Qualitative Interviews.

Themes	Sub-Themes	Illustrative Quotations From Orthodontists
<p>1. Talking with Orthodontic Patient-Student Athletes about Mouthguards.</p>	<p>1a. Who Has the Responsibility to Educate Patients About Mouthguards?</p>	<ul style="list-style-type: none"> • I feel like when they are in my care with ortho treatment, then I would take that upon myself. • Awareness is our responsibility. I think that, and I think the AAO has pretty much made that a standard. April is that month, National Patient Protection Month. • Orthodontist, dentist, but to be honest primarily the people that know whether the kids are doing sports or not would be the leagues and the coaches. If they mandate them and they can't play without their mouthguard in football, then they all worry about it. If the coaches were laissez-faire, then even no matter whatever us dentists and orthodontists do, you're going to get partial use. • Ideally I would like to see the coaches of the sports teams require mouthguards. We can talk about it and educate the patient, the dentist can as well. That's where they're going to be putting them in, and if everybody on the team's wearing them, then it'll be easier to get patients to wear them.
	<p>1b. Which Sports Should Have Orthodontic Patients Wear a Mouthguard?</p>	<ul style="list-style-type: none"> • We recommend them to anybody playing an active sport, where they could have potential trauma to the face.
	<p>1c. Initiating Conversation about Mouthguards.</p>	<ul style="list-style-type: none"> • I start discussing mouthguards with families at the first appointment no matter what the age is. • Typically, at our bonding appointment, the staff will ask if the kids play sports. Sometimes it comes up in their initial exam or consultation and we make a note that they do, but when we're putting braces on, typically is when we say, 'Are you playing any sports?,' and then, 'Do any of those sports require a mouthguard?' That's how we get the answer. • We don't typically ask them if they're playing a sport. It's if they volunteer. Any kind of conversation if they volunteer that they're playing a sport then we bring it up.
<p>2. What Factors Are Considered When Recommending a Mouthguard?</p>	<p>2a. Consideration of Patient Characteristics.</p>	<ul style="list-style-type: none"> • If they are playing soccer and they're 6 years old, I'm not very worried about them, but the kids that are elite soccer players and are 12 and 14, I absolutely am a hard sale for that. I ask if they're on a team and then what type of team and then I talk about the skill level because in my opinion, as the skills of the kids improve, the risk increases because the kids are stronger, the balls fly faster, the elbows are sharper and things get traumatized.
	<p>2b. Type of Mouthguard Recommended.</p>	<ul style="list-style-type: none"> • We encourage them to get custom mouthguards. We offer to make them in our office. • Most of the ones in the sports stores are heatable. If they're heatable, we prefer those. We usually tell them, go ahead and try them in, make them fit loose around your teeth, not too tight, because we don't want them to get too tight and knock brackets off. That's somewhat self-serving. For the most part, we just want it protective. • We recommend the stock type right out of the box, there's just a kind of trough where they bite into it.

	2c. Recommending a Specific Brand-Name Mouthguard	<ul style="list-style-type: none"> We do encourage moldable mouthguards and there's two brands that we usually recommend. There's the Under Armor Sports Guard® and Shock Doctor®.
	2d. Influence of Mouthguard Cost.	<ul style="list-style-type: none"> Because the teeth tend to change as braces align the dentition, mouthguards don't fit. So, parents tend to be a little bit reluctant to invest in a mouth guard, because it's not going to fit. And also, patients won't wear it if it doesn't fit. So, the boil-and-bite was sort of an economical way to get around that. They really requested something that fits really, really snugly that was of more low-profile. The problem in orthodontics is, if you get something that fits that well, it limits your tooth movement. We're just not that interested in taking a lot of time in making these over and over, because a lot of parents can't afford to pay for multiple mouthguards.
	2e. Fees Versus No Fees for Mouthguards.	<ul style="list-style-type: none"> We just feel it's part of our good will. They're not that expensive to buy.
	2f. Perceptions of Liability for Recommending Mouthguards.	<ul style="list-style-type: none"> If we give them a mouthguard, they sign a waiver. The purpose of the waiver is to educate them that there are risks that they're playing sports, letting them know that we'll give them a mouthguard, but it's not saying it's going to protect you against injury, maybe lessen the severity of it, but it won't protect you. It goes back, again, to liability. If somebody has a mouthguard, there's some liability associated with it, one that comes with an insurance policy is beneficial, because then you can shift that liability across to the manufacturer versus us. I don't love carrying any more liability than I have to.
3. Factors Influencing Orthodontists' Approach to Mouthguard Use.	3a. Influence of Previous Doctor on Mouthguards.	<ul style="list-style-type: none"> Honestly, this is what we had in the office when I purchased it, and we still have quite a few of them, so I've just continued to give this kind.
	3b. Experience with Traumatic Injuries.	<ul style="list-style-type: none"> I think it's just, if you practice long enough you just get trauma with athletics. That shapes your view of trying to get people more to wear them. I think that seeing trauma makes you want to try to have more people wear them.
	3c. Belief that Orthodontic Appliances Can Be Protective.	<ul style="list-style-type: none"> A lot of the dental trauma I've seen has been with braces on and I think the braces have actually protected teeth. Obviously, they don't protect lips so there's some cut-up lips and lips that need to be pulled off brackets, but the braces have probably also saved more serious dental trauma. I tell that to patients that even though the braces are protective to your teeth, they're not protective to your lips.
4. Mouthguard Characteristics.	4a. Obstacles for Mouthguard Use.	<ul style="list-style-type: none"> If it is uncomfortable then it won't be worn. They were too cumbersome; patients said they couldn't breathe so they wouldn't wear them. They were too bulky and didn't fit. It's just whether or not you're going to get kids to wear them or not. Sports where they're required, everybody wears them. Sports where they're not required, pretty much hardly anybody wears them. Doesn't matter whether they have braces or no braces or anything else.
	4b. Inhibit or Hinder Tooth Movement.	<ul style="list-style-type: none"> The custom-made ones are not going to fit if you're trying to move teeth and put appliances on.
	4c. Techniques for Custom-Made Mouthguards.	<ul style="list-style-type: none"> We do the model with the wires off. And then we take a strip of base-plate wax and block-out where we think the wire and brackets will be. There's a kind of a limit to how much you can do before it won't be retentive.