

# Lesson plan for the patient who complains of listening in noise

Week	Games	Voices	Comments/Notes
1	* pEARl Crunch, in quiet, then moderate, then high noise	Male	
	* EARonaut, in quiet, then moderate, then high noise	Male	
2	* pEARl Crunch, in quiet, then moderate, then high noise	Female	
	* EARonaut, in quiet, then moderate, then high noise	Female	
3	* MountainEAR	Male	
	* MountainEAR	Female	
4	* pEARl Crunch, in quiet, then moderate, then high noise	Child	
	* EARonaut, in quiet, then moderate, then high noise	Child	
5	* MountainEAR	Child	
	* MountainEAR	All types	
6	* FarmEAR in the Dell	Male	
	* Treasure EARland	Male	
7	* FarmEAR in the Dell	Female	
	* Treasure EARland	Female	
8	* FarmEAR in the Dell	Child	
	* Treasure EARland	Child	
9	* pEARl Crunch, in quiet, then moderate, then high noise	All types	
	* EARonaut, in quiet, then moderate, then high noise	All types	
10	* FarmEAR in the Dell	All types	
	* Treasure EARland	All types	
11	* pEARl Crunch, in high noise	All types	
	* EARonaut, in high noise	All types	

	Goals	Tips
<b>Week 1</b>	<p>Play pEARl Crunch for at least 10 minutes twice this week with a male talker in quiet, in moderate noise and then in high noise. You can determine what is “moderate” and “high” noise for you by experimenting with the setting of the noise bar at the bottom of the screen.</p> <p>Play EARonaut for at least 10 minutes twice this week with a male talker in quiet, in moderate and then in high noise. You can determine what is “moderate” and “high” noise for you by experimenting with the setting of the noise bar at the bottom of the screen.</p>	<p>“pEARl Crunch forces you to pay attention to those endings of words that add subtle meaning, such as the plural “s” in the word <i>boys</i> or the negative “n’t” in the word <i>can’t</i>. These endings are often hard to hear and easy to ignore.”</p> <p>“During every day listening, we tend to listen for the ‘meat’ of the word and not for subtle nuances. For instance, we often do not distinguish between the word <i>smile</i> and <i>smiles</i>. pEARl Crunch forces you to pay attention to word endings. Think about it: There’s a big difference between the sentences, “I <i>can</i> pick you up from the airport” and “I <i>can’t</i> pick you up from the airport.”</p> <p>“You will likely find that you are much more relaxed and confident when you are playing the game in quiet than when you are playing the game in high noise. When a person with hearing loss spends time listening in a noisy room, the person must expend an increased amount of ‘mental effort’ to understand the meaning of words than when listening in a quiet room. The reason why you may sometimes feel exhausted after having had to listen in a noisy room is that you have been forced to expend an inordinate amount of mental effort to understand what people were saying.”</p>

		<p>“Playing EARonaut develops your auditory memory, which is your ability to keep words in your mind as you listen.”</p>
<b>Week 2</b>	<p>Play pEARl Crunch for at least 10 minutes twice this week with a female talker in quiet, in moderate noise and then in high noise.</p> <p>Play EARonaut for at least 10 minutes twice this week with a female talker in quiet, in moderate and then in high noise. You can determine what is “moderate” and “high” noise for you by experimenting with the setting of the noise bar at the bottom of the screen.</p>	<p>“Playing pEARl Crunch in increasing amounts of noise will develop your ‘auditory attention’, which is your brain’s ability to focus on one auditory stimulus and ignore other auditory stimuli that are irrelevant and distracting.”</p> <p>“When background noise is present, often the first thing a person with hearing loss will notice is that word endings seem to ‘disappear’.” pEARl Crunch is designed to focus your attention specifically on these word endings and let you experiment with how your ears and brain respond to the presence of background noise.”</p> <p>“Female voices are often harder to hear than male voices. Many times the presence of background noise will make female voices even harder to hear and to understand. This is because women tend to have voices that are higher in pitch than those of men, and noise is especially detrimental to hearing the high pitches. When you have finished training with the female voices, you might want to play one more time, but with the male voices. You will likely find that you are able to increase the level of noise for your perceived ‘moderate’ and ‘high’ levels of noise.”</p>



		especially detrimental for listening to their speech.”
<b>Week 4</b>	<p>Play pEARl Crunch for at least 10 minutes twice this week with a child talker type in quiet, in moderate noise and then in high noise. You can determine what is “moderate” and “high” noise for you by experimenting with the setting of the noise bar at the bottom of the screen.</p> <p>Play EARonaut for at least 10 minutes twice this week with a child talker in quiet, in moderate and then in high noise. You can determine what is “moderate” and “high” noise for you by experimenting with the setting of the noise bar at the bottom of the screen.</p>	<p>“Children’s voices are often harder to hear than male voices. Many times the presence of background noise will make children’s voices even harder to hear and to understand. This is because children tend to have voices that are higher in pitch than those of men, and noise is especially detrimental to hearing the high pitches. When you have finished training with the child voices, you might play one more time, but with the male voices. You will likely find that you are able to increase the level of noise for your perceived ‘moderate’ and ‘high’ levels of noise.”</p> <p>“Children often do not enunciate their words as clearly as do adults because they have more immature control of their articulators. When you have finished training with the child voices, you might play one more time, but with the female voices. You will likely find that you are able to increase the level of noise for your perceived ‘moderate’ and ‘high’ levels of noise when listening to the female voices as compared to when listening to the child’s voices.”</p>
<b>Week 5</b>	Play MountainEAR at least 10 minutes twice this week with a child talker.	“This game may help you listen more effectively in the presence of background noise because it forces you to pay attention to the target word and ignore competing speech.”

	<p>Play MountainEAR at least 10 minutes twice this week with all types of talkers.</p>	<p>“Try to ignore the background noise and pay attention to which picture matches the word you’ve just heard. This activity will develop ‘auditory attention’, which is the brain’s ability to focus on one auditory stimulus and ignore other auditory stimuli that are irrelevant and distracting.”</p> <p>“Background noise will make children’s voices especially difficult to understand. This is because children tend to talk more softly than adults and because noise is especially detrimental to high pitched voices.”</p> <p>“You may not realize it, but you will likely be just a little bit slower in playing MountainEAR now that you are playing with many types of voices. The reason for this is that when you listen to multiple talker types, the brain has to use more ‘mental effort’ to process the meaning of words than when you listen to only males or only females speak the words. As a result of increased mental effort, the brain has to take more time to process meaning, and this will slow down your response time.”</p> <p>“Sometimes you might be confused and not be able to decide which picture matches the word that you just heard. This is okay. This game will require that you make quick decisions about what you heard and sometimes this is hard to do.”</p>
<b>Week 6</b>	<p>Play FarmEAR in the Dell at least 10 minutes twice this week with a male talker.</p>	<p>“You may find that some of the pictures are a little ambiguous and that it takes some thought to match the word that you hear</p>

	<p>Play Treasure EARland at least 10 minutes twice this week with a male talker.</p>	<p>with the pictures that you see. This ambiguity is intentional. Research has shown that when listening tasks force the brain to focus on meaning and consider different possibilities, learning occurs more quickly.”</p> <p>“You are learning to recognize common words that occur frequently in everyday conversation. Over time, this kind of training will make listening easier for you.”</p> <p>“If the noise seems to be getting louder, that means that you are actually getting better at listening in noise because the better you do, the more noise is introduced into the training task. The game is programmed to have more noise after you make consecutive correct answers and less noise after you make consecutive incorrect answers.”</p> <p>“One purpose of Treasure EARland is to increase your confidence in your abilities to recognize words. Research has shown that when you doubt your ability to hear words correctly, you actually don’t hear them as well as when you have high confidence in your ability. The mind becomes distracted by the doubt.”</p>
<b>Week 7</b>	<p>Play FarmEAR in the Dell at least 10 minutes twice this week with a female talker.</p>	<p>“As you play FarmEAR in the Dell, the noise in the background will gradually get louder. Try to ignore the noise and pay attention only to the word that names one of the four pictures. This game will also develop your auditory attention.”</p>

	<p>Play Treasure EARland at least 10 minutes twice this week with a female talker.</p>	<p>“Once you hear a word, try to pick the corresponding picture as quickly as you can. This will help you learn how to recognize words when people speak quickly and will develop your auditory processing speed.”</p> <p>“Even though Treasure EARland is designed to develop your phoneme discrimination, which is your ability to decide whether two sounds are the same or different, it is also developing your ability to focus on the meaning of words and developing your sense of self-confidence in your listening abilities.”</p>
<b>Week 8</b>	<p>Play FarmEAR in the Dell at least 10 minutes twice this week with a child talker.</p> <p>Play Treasure EARland at least 10 minutes twice this week with a child talker.</p>	<p>“Sometimes the pictures in FarmEAR in the Dell may be a little confusing. This is okay. The goal is to make you think very hard about the meaning of the words.”</p> <p>“The noise will get louder as you learn how to pay more attention to hearing the words and learn to discriminate between words that sound similar. More noise is a good sign, not a bad sign.”</p>
<b>Week 9</b>	<p>Play pEARl Crunch for at least 10 minutes twice this week with all types of talkers in quiet, in moderate noise and then in high noise.</p>	<p>“Even though listening to all types of talkers is more difficult than listening to all male voices or to all female voices, research has shown that training with all types of talker voices mixed together leads to faster learning and to better generalization to everyday listening than does training with a single-talker type.”</p>



	<p>Play EARonaut for at least 10 minutes twice this week with all types of talkers in light, moderate, and high levels of noise.</p>	<p>“Focus on what is ‘moderate’ noise for you. Start by setting the noise bar to its midway setting. If this makes it too difficult to hear the words, decrease the noise where you can hear the talkers, but you are still aware of noise. If in the midway setting, you can still easily hear the talkers, adjust the noise to be louder. During this process, you will not only exercise your ‘auditory attention’, or the brain’s ability to focus on a single speech stimulus, but you will also develop an awareness of the levels of noise that you can tolerate. This awareness will be helpful when you have to assess whether you will have to make accommodations for a particular setting, such as asking for a quiet section of a noisy restaurant.”</p>
<b>Week 10</b>	<p>Play FarmEAR in the Dell at least 10 minutes twice this week with all types of talkers.</p> <p>Play Treasure EARland at least 10 minutes twice this week with all types of talkers.</p>	<p>“Training with all types of talkers is the most difficult training task. However, research shows that training with “multiple talkers” is most effective in training the brain to recognize common, everyday words”</p> <p>“If the noise seems to be getting louder, that means that you are actually getting better at listening in noise because the better you do, the harder it gets to identify the words.”</p> <p>“A common complaint the people with hearing loss have when they are forced to listen in the presence of background noise is, <i>I can hear the talker but I can’t understand the words she is saying.</i> The speech may sound mumbled and unclear because noise tends to wipe out, or ‘mask’,</p>

		those high-pitched consonants, such as the “s”, “f”, “sh”, “t”, and “p” sounds. Imagine if you had to read text that had only the vowel letters and none of the consonant letters. For some people with hearing loss, this is analogous to listening in noise---they hear the vowel sounds but not the consonant sounds.”
<b>Week 11</b>	<p>Play pEARL Crunch at least 10 minutes twice this week with all types of talkers in high noise.</p> <p>Play EARonaut at least 10 minutes twice this week with all types of talkers in high noise.</p>	<p>“Start with a softer level of noise. Once you get a pEARL necklace fully “correct” (i.e., you make five right answers in a row with the same necklace), bump up the noise. Then, again, when you get a necklace fully correct, bump up the noise. See how much distance there is between where you first set the noise bar and your “high noise” level, which is the point on the noise bar where you reached a plateau in the level of noise you were able to tolerate before you started making incorrect responses.”</p> <p>“Start with a softer level of noise. With every other set of new planets, bump up the noise level by an amount of your choosing. After you play for 10 minutes, see how much distance there is between where you first set the noise bar and your “high noise” level, which is the point on the noise bar where you reached a plateau in the level of noise you were able to tolerate.”</p>
<b>Week 12</b>	Play FarmEAR in the Dell at least 10 minutes twice this week with all types of talkers.	“Try to ignore the noise and pay attention to which picture matches the word you’ve just heard. This activity will develop your ‘auditory attention’, which is the brain’s

	<p>Play Treasure EARland at least 10 minutes twice this week with all types of talkers.</p>	<p>ability to focus on one auditory stimulus and ignore other auditory stimuli that are irrelevant and distracting.”</p> <p>“Even with hearing aids, listening in noise may always be difficult. However, do you feel like you have become better at listening in noise during the past twelve weeks?”</p>
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