

## THE TOMATIS® METHOD

(Excerpts from Chapter 5, "Sound Bodies through Sound Therapy" by Dorinne S. Davis M.A., CCC-A, FAAA, RCTC, BARA, Director of The Davis Center, Succasunna, NJ)

Dr. Alfred Tomatis is considered the founder of all sound based therapies. He was the first to define the distinct difference between hearing and listening. He was considered arrogant by some and brilliant by others. Because of his confidence in his research and methods, he persisted.

### BACKGROUND

Dr. Tomatis was born in Nice, France in 1920, the son of an opera singer. He studied medicine and became a specialist in the ear, nose and throat. His practice in Paris had its emphasis on the voice. He did not care for the drugs and speech therapy methods of the time. Some of his first clients were opera singers suffering from voice problems. Their tone was off. He also became involved in a study of the effects of excessive noise on factory workers. He observed that those factory workers who developed a hearing loss from the factory noise, also developed problems with their voice. Their vocal tone was lower and they developed articulation problems. He noticed that the problems were similar to those of the opera singers. He then tested the hearing of the opera singers and noticed similar problems with their hearing. He hypothesized that the opera singer's hearing loss was a result of the intensity of their own voice. He called the hearing loss, 'sonic traumas'. He concluded that the voice could not produce the frequencies that the ear could only weakly perceive. The ear in its connection with the brain controls voice production. The larynx, then, is told what to do.

Tomatis then attempted to correct the singer's listening abilities to see if he could correct the voice. He developed an acoustic processor that could select ranges of frequencies using filters. He was able to correct the listening abilities of his patients by having them sing while listening to their own voices processed through the machine. By singing into the microphone, their voice would pass through a filtering system that would remove the frequencies that they could hear well, and increase the ones not heard well. The patient could then emit the notes that he had been unable to produce prior to the correction. He demonstrated this phenomenon before the Academie des Sciences in 1957, and later before the Academie Nationale de

Medicine in 1960, both in Paris. His discovery was later called "the Tomatis Effect".

The change in the singer's voice lasted only while the headphones and sound from the acoustic apparatus was on. He needed to find a way to allow the person to maintain the voice in everyday life. Eventually, he was able to do this with his device called "the Electronic Ear" and a protocol of specific listening.

He also concluded that there was a difference in the singer's voice quality when input from his device was directed to right versus the left ear. The 'right ear lead' seemed to develop better voice quality than with a left ear lead. This observation led to his 'leading ear theory'.

Dr. Tomatis also compared the audiograms of the factory workers' with the opera singers' and noticed similarly shaped audiograms (tests of hearing). The shape, or pattern, was only specific to those people with a musical background. He called this phenomenon a "musical ear". There were specific 'ears' for singers and musicians based upon what they sang or played, i.e. baritone ear or violinist ear.

Other aspects of his theory became evident over time as feedback was received from his patients. Patients reported that foreign accent was reduced or eliminated with his method; it became easier to learn a foreign language; it was easier to read, spell, write, and learn overall; and social/emotional problems lessened. Because of this positive feedback, the Tomatis® Method was used to help people in many different areas—including singers, actors, and musicians, those diagnosed with learning disabilities, autism, and attention deficit. It was discovered that the Tomatis Method had broad application.

### THEORY OF THE EAR

Dr. Tomatis did not look at the functioning of the ear in the same manner as his contemporaries. Typically the ear is considered to have three parts: the outer, middle, and inner ear. Dr. Tomatis, instead, expressed the need to look at the ear as an external and internal ear. The separation is between the second and third bone of the

ear in the middle ear cavity. He theorized that the function of the three bones is one of protection because they dampen (or muffle) the excessive vibrational energy coming from the ear canal. He also stated that the stapedius muscle is the most active muscle in the body. It is always working.

Additionally, Dr. Tomatis theorized that hearing occurs because sound is transmitted through the bones of the skull and not through the three bones of the middle ears. Specifically, he felt that the temporal bone receives sound from the eardrum. The bone then vibrates, sending sound to the basilar membrane in the cochlea where the Organ of Corti is. From there sound is transmitted to the brain.

He felt that the purpose of the three bones in the middle ear was for the pneumatic regulation of sound. They control the variations of air pressure between the outer and inner ear. The system is regulated but not through frequency. The stapedius muscle must keep vigilant to regulate the pressure in the inner ear. The tensor tympani must keep vigilant and remain tonic to outer messages. In order for the middle ear to work well, it must be able to withstand the higher intensities for longer periods of time. The stapedius muscle must remain vigilant and be maximally effective to do this. Because sound is transmitted through bone conduction, internal localization of sound can occur. This localization occurs in the cochlea because of its shape. Sound then makes the entire cochlea vibrate sending the necessary sound to the brain. Dr. Tomatis felt that the brain receives more stimuli from the ears than from any other organ. High frequency sound can bring about maximal cortical recharging.

Dr. Tomatis also stressed the connection with the face. The facial nerve innervates the muscles of the face, including the lips. These muscles are important for intelligibility of speech, and the clarity of one's voice. This same nerve also innervates the stapedius muscle in the middle ear, and also the muscle that opens the mouth, the digastric muscle. The trigeminal nerve connects to the tensor tympani muscle in the middle ear as well as to the masseter and temporal muscles that allow us to chew and close our mouths. Is it any wonder that Dr. Tomatis surmised an ear-face connection? While testing non-verbal or non-reactive children auditorily, an audiologist skilled in watching children can, through observational audiometry, determine if the child is listening, from facial cues. Prior to speaking, the stapedius muscle reflexes. Consider also the child who is clenching his teeth while listening to someone. Is that child able to listen? Or

has he closed off his ear? Yawning also activates the muscle and also closes off listening.

### **THE TOMATIS EFFECT**

After demonstrating his technique to the Academies in Paris, it became known as the "the Tomatis Effect".

He stated three laws:

1. The voice only contains the harmonics that the ear can hear.
2. If you give the possibility to the ear to correctly hear the distorted frequencies of sound that are not well heard, these are immediately and unconsciously restored into the voice.
3. The imposed audition sufficiently maintained over time results in permanently modifying the auditory and phonation.

This effect had a major impact on the scientific community at the time. Dr. Tomatis was able to demonstrate that the two organs—for voice and hearing—are part of the same neurological loop. Changes to one impact the other. If someone has normal hearing and they are not an active listener, the voice will not respond at all frequencies. One must consciously decide to listen to something or someone.

### **AUDIO-PSYCHO-PHONOLOGY**

Dr. Tomatis believed that listening was not a given at birth. Hearing is a given (provided the mechanism is working). Listening builds with training. After one's physiological development, one's hearing basically stays the same (of course, with some exceptions like progressive hearing loss). However, one's listening capacity is learned, trained, and can change with time.

After working with the opera singers and factory workers, Dr. Tomatis wanted to find a way to enhance listening skills. This led to the development of a more sophisticated machine called the 'Electronic Ear'. While treating the ear and the voice he soon discovered that he was also treating changes in behavior, especially at the level of communication. He then changed his earlier emphasis towards the psychological aspects of the listening response. He began to work within the areas of learning disabilities, integration of foreign language, communication balance, psychological balance, and the re-energizing of older people.

### **THE FUNCTIONS OF THE EAR**

In addition to the two parts of the ear mentioned earlier, Dr. Tomatis also postulated three functions for the ear:

1. Hearing

2. Balance and body posture
3. Cortical re-energizing

## HEARING

Hearing is the unconscious passive process of taking in sound. Listening is what one does with one's hearing capacity. This makes it an active process. Listening is the result of constantly making choices. Our hearing mechanism allows us to analyze and decode sounds both from the external world and internally through our body—in particular, our own voice.

There are two ways for sound to be conveyed to the ear: through air and bone conduction transmission. An important part of the Tomatis® Method is the testing of both the air and bone conduction transmission of sound—not for threshold, as with an audiogram, but for a listening response. Bone conduction also measures the sensation of sound.

In utero, there is liquid in the ear. Liquid is an excellent transmitter of sound. The outer and middle ears, however, start to work in a different manner once the liquid is drained from the ear after birth. Dr. Tomatis stressed that the child in utero uses liquid transmission of sound to the cochlea (that postnatally becomes the air conduction channel) and bone conduction vibration that bypasses the middle ear, and goes directly to the cochlea. Bone conduction vibration seems to be faster. What is really happening is that the low frequencies enter the embryo's ear the loudest. Dr. Tomatis theorized that low frequency sounds have a sedative effect and numb the ear. The high frequencies are actually attenuated more than low frequencies in utero. The fetus can hear all of its mother's body rhythms and sounds, like the heart beat, but can filter them out to process the high frequency sounds. The fetus reacts strongly to high frequency sounds. Dr. Tomatis feels that the fetus wants to hear and selectively picks out the high frequency information necessary for speech, thereby creating the predisposition towards wanting to learn speech after birth. In other words, the child needs to 'actively' listen if it wants to learn.

## BALANCE AND BODY POSTURE

Balance is one of our most basic functions. It involves our vestibular system. It affects our equilibrium and has an effect on our muscles. Dr. Tomatis believed that the balance system not only dealt with balance, it also impacted sensations of body posture, the control of body positioning, and that it was receptive to sound waves.

When one reaches the perfect posture, the body reaches out and literally engulfs all of the external sounds. His

assumption was based on a posture that is vertical. Verticality is extremely important to the Tomatis Method. Dr. Tomatis felt that the ear's main function is vestibular—to unconsciously maintain balance. It is the ear that first establishes a spatial dynamic in the brain. The visual system is later superimposed upon this.

When Dr. Tomatis started working with the opera singers who lost their voice quality, he also noticed that they started to slouch. However, when the ear was stimulated through the Electronic Ear, the body straightened up and they were able to again breathe more deeply. He also observed that children with learning problems also improved their balance, coordination, and motor skills.

All body movement is communicated to our motion center, the vestibular system. Because of the interconnectedness of the fluids between the vestibular and cochlear portions of the ear, this movement is sensed in the cochlea. Dr. Tomatis says that the sounds that fill all cells with life are the higher frequency ranges. It is an 'inner song of movement' that must be discovered and deciphered when the external conditions are favorable. The problems of life interfere with this inner song and stunt one's ability to listen. He said that special conditions are necessary for hearing and maintaining this ability to listen. This is his listening posture.

He further stated that one's listening posture is an outcome of one's past. It depends upon your mother tongue (language you speak as a child), your sound experiences, your defenses used to put up with sound stimulation, your cultural experiences, your educational experiences, and your musical experiences. It is made up mostly from your body's defenses. Musicians tend to open their ears to more frequencies than others. By the time one is an adult, the listening posture is set. It is a physical reflection of a psychological posture. The Tomatis® Method works more on the physical side rather than the psychological side. If so, then why are psychological repercussions often seen? It is the connection to the middle ear. The muscles are always modifying. There are habitual patterns learned. By way of the muscles in the middle ear, one's psychological listening posture is expressed by their physical posture. By retraining the ear, the nerves are activated and numerous effects occur.

## CORTICAL RE-ENERGIZING

The ear functions as an energy generator for the brain. Sounds give energy to the brain as they pass through

the ear. The ear charges the brain with electrical impulses. In effect, it is charging the brain like recharging a battery.

Dr. Tomatis has said that 90-95% of the body's total charge (cortical re-energizing) comes from the ear. 60% comes from the vestibular system because it controls balance. The cochlea adds another 30 % because of the processing of the sounds themselves. The brain needs stimulation to function. The ear brings the sounds to the brain and organizes the perceptions from the rest of the body. The ear is an energy source. The voice of the person provides a source of stimulation to themselves. The voices of others also provide stimulation.

The better the voice is, the better the listening, and the more the brain will recharge. By controlling the voice through the ear, the vocal quality will improve. It becomes an audio-vocal loop. This can also work in reverse. The duller the voice, the poorer the listening, and the brain has less energy. Singing is the highest form of vocal expression and provides the most positive stimulation towards reaching body harmony.

There are two kinds of sounds. 'Discharged' sounds make one feel tired, and fatigued. 'Charged' sounds provide tone and health. In order for the brain to remain dynamic, it must have sensory stimuli.

#### **UNDERLYING PRINCIPLE OF THE TOMATIS® METHOD**

Dr. Tomatis' Method seeks to re-activate the processes of primitive listening by stimulating the ear through the filtered music played through his Electronic Ear. His listening program restores the sensation of sound that was activated in utero, thereby awakening the memory associated with the acoustic environment as it was in utero.

Dr. Tomatis feels that this process is one of psychological regeneration. One must first relearn what sound was like as though in utero, then come through the change between listening in a fluid versus through air, and then finally through air alone in order to reactivate the ability to communicate.

#### **RIGHT EAR LEAD**

Dr. Tomatis discovered that singers had a better vocal quality when they had a 'right ear lead'. It is a form of listening lateralization. Dr. Tomatis did not develop the idea of a leading ear, but he did theorize the importance of it in regards to one's voice. He felt that physiologically it was better to have a right ear lead,

'the leading ear', because it was the quickest connection to the left hemisphere of the brain—our language center. He felt a left ear lead took longer, used more energy, and was less effective. This leading ear impacts one's voice, language, concentration, and memory.

When Dr. Tomatis did experiments with the two ears, he noticed that when he masked the right ear, the effect was negative and immediate relative to intonation, rhythm, volume and sound quality whereas when done similarly with the left ear, no effect was noticed. It is important to note that with a 'right ear lead', both ears are working but the right one is the dominant one. It also means that the right ear is the one used to hear one's own high frequency information thereby continuing to recharge the brain's own energy. When we listen with the right ear, the perceived information is sent quickly to the left hemisphere of the brain where it is analyzed. Without a right ear lead, hesitant and monotonous speech can develop, and in some cases dysfluency such as stammering and stuttering.

#### **MUSIC OF THE TOMATIS® METHOD**

In order to recharge a person, Dr. Tomatis utilizes three types of music: mother's voice, filtered Mozart, and Gregorian Chant.

#### **THE MOTHER'S VOICE**

The Tomatis® Method is about making change within the person. A part of the change process may include the use of the mother's voice because the area where the person may have gotten 'stuck' with his own personal listening skills may relate to an in utero event. In utero, the low frequencies are heard more strongly than the high. Dr. Tomatis used the mother's voice filtered so that the high frequencies were stressed. He learned that listening to the mother's voice with the filtering is an important part of listening. In this way, the body is energized to make change at the very beginnings of the listening program.

#### **FILTERED MOZART**

The music of Mozart is used because it is well-balanced and enjoyed by most people. It seems to create a balance between the charging effect needed and the calming effect being sought. His rhythms, melodies, and the use of high frequencies stimulate the brain and seem to energize the tired and depressed, while calming the overly active.

Dr. Tomatis filtered the music to eliminate the low frequency sounds, while retaining the higher harmonics of the music. As a result, the listener hears a

concentrated and emphasized amount of the high frequencies during specific parts of the program.

### **GREGORIAN CHANT**

Gregorian Chant is used because of its slow, rhythmic, relaxing effect. Similarly, as with the heartbeat, a repetitive, rhythmic movement is picked up by our vestibular system, and as with the unborn child, gives a sense of calm. In a way, the chanter is entraining the listener to a respiratory pattern of extreme calmness.

By using the Gregorian Chants with his Electronic Ear, Dr. Tomatis artificially imposes a relaxed system on the listener. While doing this, temporal processing cues are being utilized. He calls it “speeding up the process of slowing down”. Eventually the listener incorporates the use of his own voice to mimic the monks. The listener’s higher proprioceptors are stimulated and they breathe deeply to match the monk’s breathing.

There is a direct relationship between the way one vocalizes and the way one hears. With chanting, one prepares the muscles of the middle ear to function correctly in order to train the mouth to function properly. The sound starts in the larynx, the bones begin to vibrate, the inner ear is triggered and the message is sent to the brain. It is this stimulation of the bones that is similar to listening in utero. Most people tend to forget how to use this skill after birth. Chanting is different from music in a variety of ways. It has no meter. It is not based on a rhythm. It is based on the person’s breath stream. One learns to chant by controlling their respiration rate. Dr. Tomatis used the Gregorian Chant because it uses high frequency tenor voices to stimulate the brain.

### **THE ELECTRONIC EAR**

Dr. Tomatis developed his Electronic Ear in order to make change. The Electronic Ear uses pre-recorded music that emphasizes the high pitched frequencies necessary to stimulate ‘cortical re-energizing’. This is the core of Dr. Tomatis’ audio-vocal technique and the main element of the individual listening program. The Electronic Ear has two principal channels that have a connection between them. This connection has been compared to a ‘gate’. The first channel allows the listener to hear as they normally would. When the ‘gate’ of the second channel is opened, the listener now hears sound that is enhanced with high frequencies. The machine switches back and forth between channels thereby exercising the muscles in the middle ear. The

Electronic Ear is engineered to challenge and adapt the middle ear muscles, the tensor tympani and stapedius, to work together. When repeating the Gregorian Chants or other vocalizations, the listener learns to control the frequency and intensity of his own voice—often unconsciously. The Electronic Ear imposes the spatial determination of the middle ear bones in order to control the frequency and intensity transmission of sound.

### **PHASES OF THE TOMATIS® METHOD**

There are 5 stages of the Tomatis® Method. These stages bring the listener through various levels of listening development. The first two stages prepare the listener for relating to the world around them and establishing a base for listening. The third stage marks the turning point between listening and voice work. The final stages heavily emphasize the listener’s voice, thereby stabilizing the voice-ear connection and cortical charge.

These stages are divided into 2 phases: the passive and the active. The passive phase ‘prepares the listener’ towards the desire to communicate. The active phase works on the communication structure and includes active use of the voice.

### **SONIC BIRTH**

Throughout the early stages of the listening program, either the mother’s voice is filtered, or filtered Mozart music is used to simulate the mother’s voice in utero. Dr. Tomatis discovered that early listening starts in utero. The fetus perceives the mother’s voice through bone conduction. The sounds of the mother’s voice are filtered. It is from this type of listening that he felt the desire to listen develops. The desire to listen creates the desire for communication.

Upon completion of stage 3, the listener will have gone through the Sonic Rebirth that prepared them for the active voice work that develops communication after their ‘re-birth’. In other words, they leave the passive ‘in utero’ listening work and move into the active ‘after birth’ listening work. (author’s description) The ear now has a better balance between listening and speaking.

The use of filtered mother’s voice tapes is particularly effective with children who have learning difficulties or weak social interaction skills. After listening, children often become more social and want to make new friends. Homework frequently becomes less cumbersome. Children who are non-verbal often begin to make communication sounds. Babbling might start,

and eventually turn into words. The filtered sound seems to create a desire for them to want to communicate and leads to language development.

For the adopted child, the Sonic Rebirth provides a connection with the listening world that may have been missing. They hear their birth mother while in the womb and then, they hear another mother after birth. Sometimes emotional connectedness is not maximized because of this. The Sonic Rebirth prepares them for a new sense of listening to the world. Clients frequently express a noticeable change in their relationship with the adopted mother and people around them. They feel more at ease and connected with the world in general.

Children, who at birth, must be placed in an incubator, may benefit from the reassuring warmth of their mother. Many hospitals have parents touch the baby while in the incubator to maintain sensory stimulation. Additionally they benefit from listening to their mother's voice. A tape recording of the mother's voice singing or sharing a story or life experience is reassuring, soothing, and nurturing to the child. This also encourages the baby to continue to develop listening in the external world while recreating a sense of connection to the internal world of their mother's voice, as though in utero. Their listening can expand.

### ASSESSMENT FOR THE TOMATIS® METHOD

Dr. Tomatis developed specific tests for his method because standardized tests, at the time, did not provide the information he needed. His assessment consists of four parts: the intake, the listening test, the laterality test, and the consultation.

#### THE INTAKE

This portion of the assessment will vary with the consultant, but is essential to understanding the client. The person's development should be reviewed—was their overall development normal or delayed?

Other issues to be discussed:

- learning issues—reading, writing, spelling, comprehension, etc.;
- social/emotional issues—do they interact well with others, do they keep their thoughts mostly inside;
- vestibular issues—motion sickness, dizziness, wanting to spin or not spin, craving rocking or swinging;
- attentional issues—focusing in school or at work, attention, organization, etc.;
- oral motor issues;
- language issues—both expressive and receptive;

- voice quality—too high or low vocal pitch, weak or excessive vocal intensity, rich or weak vocal sound, etc.;
- sensory integration issues—are some senses more sensitive than others;
- muscle tone—are they hypotonic;
- personal health issues—have they impacted the person;
- self issues—how does the person feel about themselves

Client goals and objectives need to be discussed as well.

Many people are attracted to the Tomatis® Method because of the educational learning aspects of the method. Additionally, some may want to focus on the personal growth learning aspects, while others the foreign language learning aspects. An actor may want to enhance their speaking, emotional, and vocal production. (Gerard Depardieu, the famous French actor, as discussed in Paul Chukow's biography of the actor, attributes his success to Dr. Tomatis and his method.) The musician may want to enhance his singing voice, or expression while playing an instrument. It is important to find out the person's overall functioning and what they hope to accomplish with the method.

#### LISTENING TEST

The listening test is one that Dr. Tomatis developed. It is done with a device similar to an audiometer (a device used to test hearing) called the Listening Test System, and in some rare cases with an audiometer. However, the listening test cannot be compared to an audiogram (the diagnostic test that uses an audiometer) because it measures within different parameters and is calibrated at different levels. The Listening Test System was developed according to specific norms intended to supply a graphic expression of listening. The listening test is the key test for measuring change while using the method.

The listening test is intended to demonstrate the client's listening posture and can be used as a guide to determine individualized modifications for each program. The test evaluates the following: air conduction listening curve, bone conduction listening curve, spatialization errors, selectivity, and lateralization. Occasionally, depending upon the results and the person's hearing, additional testing may be necessary.

The listening test provides information about one's body image, time and space issues, motor skills,

rhythm as it relates to language, ‘foreign language’, and music, and practicality such as with geography, conjugation of verbs, and history. It also provides information about understanding rules and regulations as in math and grammar, comprehension as in reading and receptive language information, verbalization, vocabulary, memorization, and the analysis of information. Additionally it provides information about concentration, listening in general, the desire to communicate, imagination, creativity, and the richness of ideas. Results of this test, guide the consultant in the setting of the client’s listening program. The data reveals the ‘listening posture’ and information about how the client processes sound information.

Dr. Tomatis feels that the vestibular system is in charge of controlling the body. Each muscle is connected in some way to the vestibular system and when the muscles move, the vestibular system informs the brain of the movement. The body needs to be in balance or harmony between the right and left side. This harmony is necessary for movement in general and good coordination. If the vestibular system is out of balance or harmony, tension is present. The tension may be demonstrated as clumsiness, lack of flexibility with fine and/or gross motor activities, writing weaknesses, poor rhythm skills, difficulty with time and space concepts. These skills can affect learning, especially language, and may affect skills associated with music, singing, and dancing. It may manifest itself as trouble with dates, or distinctions of yesterday, today, and tomorrow. Stuttering is also a component of rhythm. Because the client is often aware of the problem, they are put in a place of excessive control. They need to decide all the time what is correct and this requires a lot of energy. It also creates doubt. Through the listening program, the vestibular system is stabilized and the individual’s perceptions increase bringing better balance for the body.

What if the problem lies between the vestibular system and the auditory function itself? For example, hyperacusia is an excess of sound stimulation and results in an oversensitivity to noise. The body does not allow for correct integration of sound. Sound is unpleasant. Dr. Tomatis feels the muscles are not sorting out what sound should be allowed in and therefore, noise becomes bothersome. The auditory nerve is being over-exposed. In this way, he explains that air conduction transmission of sound reflects the middle ear muscles; and bone conduction transmission of sound reflects the inner ear or auditory nerve. When both the vestibular system and the cochlea are affected, it is important to work on the vestibular system by

stimulating the muscles of the middle ear first, thereby lowering the auditory hypersensitivity. In this way, the vestibular system can be rebalanced.

For body energy, Dr. Tomatis feels that the ear is a power generator. Sound is necessary because it gives the brain energy to remain active. The cochlea is in charge of high pitched sounds. It is the high pitched sounds that give energy to the body. Energy to the ear helps the person be tonic. They have more desire to do things and take charge of themselves. They feel more effective and act more efficiently. They allow for better creative expression. Typically people with hypoacusia, or those who tune out sound, appear more tired. They close off more of themselves from others. They have less desire to communicate with others. They feel exhausted and often don’t want to move around very much. They lose their high frequency emphasis and tend to listen to music with lower frequencies.

The listening function is parallel to the hearing function. However, this implies that people have the will to listen to the outside world. A person can hear well but not listen well. Listeners must facilitate comprehension, or integrate the sound messages, within themselves and to others. In this way, they can make an adaptive and appropriate response to their environment.

The person must know how to listen and be able to integrate several aspects of sound. The first function is sound discrimination. They must discriminate useful from useless sound. They must be able to put meaning to significant information. Second, is the accommodation of sound. They protect themselves against sound. They learn to spontaneously listen for pertinent information. However, when the function of listening is blocked, the person reverts to using his intellect and is then forced to select specific information. With this method, the listener gets tired very quickly and often chooses inappropriate information to listen to. The third function is directional, aiming for a sound. When listening works correctly, the listener can identify where the sound came from. They are certain about what the message means because they know where it came from. Auditory lateralization is an essential quality of listening. For example, if a message to the right ear gets projected to the left brain, a quickness in the integrity of the message is implied. It has clarity and allows for efficiency of memorization, thereby allowing good use of the information for a quick response.

From the Listening Test, as an audiologist, I can determine when the client begins to perceive or process sound at various frequencies both with air and bone conduction. I can determine where the person is localizing sound. I can determine how well the person perceives pitch differences. And I can determine which is their dominant ear for listening. This information provides significant data about one's auditory processing skills. For those children unable to be tested for central auditory processing skills due to age or disability, the Tomatis Listening Test provides helpful information about their auditory processing functioning.

### **THE LATERALITY TEST**

The Laterality Test evaluates a person's body laterality as it relates to their body image, their vision, and the motor skills of their hands and feet.

### **THE CONSULTATION**

After the general intake and evaluation is performed, the consultant meets with the client to discuss the results. Based upon this discussion, the evaluation data, and the client's personal history, the consultant draws conclusions about the client's listening. From this, the goals and objectives are identified and agreed upon, and the program of listening is determined.

### **THE TOMATIS® LISTENING PROGRAM**

The Listening Program is determined from the results of the Initial Assessment and Consultation. The basic program consists of (2) sets of 15 days of listening for 2 hours each day, separated by three to 6 weeks. The first set should be 15 straight days, but the second fifteen days can be broken up into 8 and 7 day sets, with various separations between the sets. The more intensive beginning is important because often the results are more dramatic and appear much faster.

Changes to the program are made based upon subsequent listening tests. The program moves from the passive phase where the listener does not consciously have to pay attention, to the active phase, where they learn to use their voice, as described previously.

The active phase moves from singing and chanting, to speech as words and sentences, and finally to reading out loud. Once reading out loud begins, the voice gets richer, stronger, and better articulated. At this point, the visual component for writing language also begins to develop. The comprehension of language is easier because the ears, the eyes, the voice, and the brain are

all working together. At this stage, handwriting, spelling, and written expressive language skills improve. The improvements start earlier in the program but it isn't until the final stages that things begin to make sense.

### **WHO CAN BE HELPED?**

The Tomatis® Method is beneficial to people needing help with listening disorders. The Tomatis® Method is currently being introduced into the United States as an educational program. It is called the Solisten™ Training Program, and is considered an educational application of the Tomatis® Method. In the other Tomatis Centers throughout the world, the method is used in a variety of ways and has been accepted in their medical communities. In Switzerland, for example, the government pays for the Tomatis® Method under its health care plan. The name Solisten™ distinguishes the specific claims for this training in the U.S. from broader worldwide claims and applications of the Tomatis® Method. The FDA does not require regulatory control for Solisten™'s educational application claims. (Solisten™ is a registered trademark of the Sound Listening Corp)

Adults who want to expand their 'personal growth', feel more confident about themselves, develop organizational skills, get rid of a foreign accent, stay more focused, learn to listen better, learn to follow conversations better, develop visual motor skills for sports, learn to use their voice better (singing or speaking), etc. have utilized the Tomatis® Method to accomplish this. It has helped them get refocused and energized. Sometimes it opens up their creative channels.

For singers who have begun to lose their vocal capacity or for those who have not reached their vocal capacity, the method brings about a body straightening, a widening of the thorax, and an improvement in deep breathing. Additionally, their voice improves and the energy level increases.

Children who have learning and developmental issues have been helped. The Tomatis® Method does not work on any one disability category but has helped people with listening disorders who have also had the following classifications or diagnoses: autism, developmentally delayed, Down's Syndrome, neurologically impaired, Central Auditory Processing Disorder, Attention Deficit Disorder (also ADHD), Receptive/Expressive Language Disorder, Apraxia, and Dyspraxia. Additionally, it has helped with sensory integration issues, oral motor issues, vestibular

imbalances, proprioceptive issues, attention and focusing issues, coordination issues, and stroke related issues. It has helped develop reading skills, spelling skills, writing skills, math skills, and memory skills. It has helped students who need English as a Second Language. It has helped students listen and speak a foreign language better. The method has broad applicability.

Because the method helps bring better balance to the body, one's self-confidence improves, learning becomes easier, and negative attitudes often disappear.

### **LISTENING DISORDERS**

What can happen when listening is not at its best? We will look at the listening disorders as they relate to the 3 function areas: the vestibular, body energy, and listening.

#### **Vestibular**

We have discussed that the vestibular system controls posture and balance when both sides of the body are in balance, the body functions harmoniously and the body's movements are well coordinated. However, when the body is not in balance, the following areas are affected:

1. **Posture:** The skeleton may be out of alignment and body tensions increase. Adults may experience back pain as a result.
2. **Motor Skills:** Poor body alignment may result in clumsiness, coordination problems, lack of flexibility, weak fine motor coordination, and non-precise gross motor movements. Dyspraxia, dysgraphia, and dyslexia are sometimes associated with these skills.
3. **Rhythm and Time/Space Skills:** Poor rhythm skills may result in learning and language problems. Foreign languages require good rhythmical representation. Music and dance are also impacted. People may misrepresent their body image, have left/right confusions, and have fluency problems. The person becomes hesitant in his responses because his responses have required too much energy to feel positive about the response.
4. **Psychomotor Immaturity:** With immature systems, the body may make involuntary movements, have poor coordination of movements, have poor muscle tone, and lack verticality.

#### **Body Energy**

With improved body energy, the person feels that his body is in harmony and that his creative potential and

individual sensitivity are enhanced. However, when not energized, the body may respond as follows:

1. **High frequency hearing loss:** When this occurs, the listeners become more tired, and isolate themselves. They often lose the listening posture and listen less to sounds.
2. **Depression:** The person increasingly begins to shut himself off from others. He might lose his creativity and desire to communicate, and in some cases, the will to live. They feel exhausted, and often don't want to move.
3. **Artists:** Creativity seems to slow down. They seem disinterested in social/emotional relationships and lose their sensitivity. Musicians notice a change in vocal quality and tonicity.

Overall, this function is depicted by a decline in motivation.

#### **The Listening Function**

There are four components for effective listening: discrimination, accommodation, location, and auditory laterality. What happens when there are difficulties in these areas?

1. **Discrimination:** If one has difficulty analyzing differences between sounds, the results can be varied. A musician may sing off-key. A child may confuse consonant pairs such as m/n or p/b within words. This not only impacts receptive language but also expressive language and reading. When learning a foreign language, if the sounds have not been analyzed properly, one retains an 'accent'. A child may speak with a very soft voice because he does not have the skill to modulate it. Additionally, a child may have difficulty with receptive language because he does not have enough discrimination information to decipher what was said. With the inability to correctly decipher the language, the listener becomes unsure. His response may be expressed as one of anger, anxiety, frustration, or withdrawal to within himself.
2. **Accommodation:** The body accommodates to its surroundings. If someone must strain to listen, they become tired. They turn off their listening. For some children, their school day consists of turning on and off to sound stimuli as the need for them arises. They may tune out what is difficult for them to attend to. Listening then becomes selective. Attention span diminishes. They may learn only through memorization. If listening becomes a chore, one tends to back away from listening and isolate himself. They withdraw into themselves. They listen only to themselves. This

is often seen with autistic children. Vocal control is strained. People may tend to speak too loudly or too softly. In order to make the listener aware of how they have accommodated to the listening situation, they need to be forced into listening--- calling his name or tapping him on the shoulder. While some people turn inwards, others react outwardly. They move around a lot—unable to stay focused on something for any length of time.

3. Location: The ability to localize to a sound is important to time and space concepts. The person may seem confused, may not be able to determine which is right or left. They may respond hesitantly to a situation. They feel uncomfortable in new situations. The feeling of being uncomfortable actually comes from within their body. They may be clumsy. When playing any sport activity, location is important for motor coordination. Scholastically, time and space concepts are important in mathematics and history. Children may invert letters within words. Dr. Tomatis also felt that stuttering is related to an imbalance between right and left processing.
4. Auditory Laterality: The ability to lateralize to one ear will impact singing on key. It will impact a time delay for processing auditory information in the brain. When this happens, the brain has difficulty controlling the output of information. Speech may be choppy, or the person may seem to respond to only every other word, or portions of what was said, and not the whole. The voice may be monotonous or the voice may lack richness. For some, the term “Selective Attention” has been used. The memory is only able to retain the most important information and the recall may be difficult. Sometimes the ‘important information’ may not be the necessary information for comprehension but what the person needed to hear at that moment. The listener has to use a large amount of energy to listen. They tend to tire very quickly. When they tire, they may act in what is considered an inappropriate way by others, such as moving around, touching others, tuning out, speaking out of turn, etc. Their actions may appear to be socially not acceptable.

The person with auditory laterality problems may find it difficult to understand what has been said to him and not know why ‘others’ continually say the ‘wrong thing’ or ‘don’t make sense’; or why ‘others’ don’t understand them. They can get frustrated very easily and for some, give up easily.

### **All Three Areas of Dysfunction**

When all three areas are involved, the problems become more severe. Children, for example, may demonstrate issues with all three areas if their development was delayed. Children with pre-natal or birth traumas may demonstrate issues in all the areas.

Children with middle ear infections are very often at risk for auditory processing issues. In my last book, “A Parent’s Guide to Middle Ear Infections”, I reported, if a child had 5 or more middle ear infections before age 2 he was at risk for learning problems. Additionally, if a child had 5 or more middle ear infections before age 5, he too, was at risk for learning problems. The establishment of good auditory processing connections cannot happen if the middle ear transmission of sound is blocked. Also children with middle ear infection histories are more prone to language weaknesses. The “Ear/Voice/Brain” connection that Dr. Tomatis emphasized helps explain what is happening. There is an immaturity to their neural circuits for controlling the body and language. They want to communicate, but have difficulty accomplishing this through speech. Some revert to other means such as kicking, spitting, pulling hair, pushing, or touching others. Their proprioception skills are out of balance so they connect through this heightened or over-excited sense because that is the level they can best function in. It is with this child that the vestibular system needs to be adjusted first, in order to move towards better balance. This must precede language skills so that clarity of language occurs.

Some children are delayed with language development. For these children, Dr. Tomatis relates the delay in language to their need to be vertical—their posture needed to be upright for their listening to begin to develop. Once the ear was better positioned, listening, followed by language could occur.

Adults demonstrate listening problems in all three areas in different ways. The adult, for example, may become depressed. They have lost their energy for life. Dr. Tomatis looks at his method as helping them “recirculate their energy”. Others may express themselves as being anxious. They may have relational difficulties. They may be tense or aggressive. They may become ‘loners’. They may feel exhausted all the time. Dr. Tomatis feels that they have insufficient recharging and therefore, their energy does not recirculate.

Some adults, including young adults, may demonstrate social integration difficulties. They may have

emotional issues. Dr. Tomatis characterizes this as having a complete closure of the ear, very early in life that was probably caused by a major trauma. The Tomatis® Method works on creating harmony in the body and works on opening the ear to the outside world, thereby opening up their overall potential.

## CHANGES

The above Listening Disorders have changed with Dr. Tomatis' Method. This does not mean a person is 'cured'; however, various degrees of change do occur. Typically changes occur over a period of time—some rather quickly and some at a slower, more steady pace. Additionally, as with most change processes, the Tomatis® Method can be coupled with other supportive therapies for additional growth.

Physiological changes can take place. Some of the most commonly reported changes are: better balance, better respiration, better fluidity in movement, and better posture. Articulation becomes clearer, the voice is better controlled, and speech is more intelligible. The body is controlled better and attention is maintained for longer periods of time.

The parents of children with listening disorders, and the client's themselves must be willing to accept the change and have a desire to grow. Most change is positive, but for some of the more severely impaired children such as the autistic, so much change is necessary that although the change is a movement forward, it may be difficult to adjust to--initially. Patience is required to allow for maximum cumulative gain to occur.

In some cases, the change is unwanted. On initial assessments, parents report that their child is growing physically but not educationally. They want their child to be speaking better, learning better, and communicating better. However, they typically only have the end picture in mind—a speaking, communicating, child that learns easily. However, in order to get to that end picture, many changes must take place over a period of time. With the older child, sometimes the change is more difficult because they need so many levels of change to occur. For example, a child may seem compliant who sits in the corner reading books or watching TV all day, yet doesn't talk. The parents say they want their child to talk. The parents know how to handle the child as he is functioning right now, and even though he doesn't talk, they are comfortable with his 'calmness' and ability to keep himself occupied. Once therapy begins, the child

is awakened to the world and may start doing some 'unexpected' and 'unwanted' things. They may start exploring the house and outside. They may want to experiment with things in their environment that they knew were there before but just didn't care about—maybe fill the bathtub up with water and let it spill over; maybe start hitting and punching their siblings or other children and adults; or maybe take walks alone in the neighborhood because of a new sense of who they are and where they are. They may also start experimenting with their oral motor and vocal skills. They may start trying out new foods because of the sensation changes with the Trigeminal and Facial Nerve innervation, or want to start chewing or biting things. They obviously need to have time to experiment with these new sensations while learning to control them. All of these changes are steps toward a better balanced child. Of course, along the way, other changes are also taking place—maybe language skills advance from one word utterances to 4 word utterances; or maybe they can maintain eye contact when spoken to; or maybe they can begin to understand receptive information 75% of the time; or maybe they have become potty trained; or maybe they have developed empathic responses to other's feelings; or maybe they have begun to play with other children. The list can go on and on. To make steps forward, the body needs to get reorganized. While it is reorganizing, the responses may be distorted--initially.

For adults who may start out being tight and tense, a feeling of calmness descends upon them, often after a period of feeling tired and washed out. Those who start out being depressed may actually become upset or angry in the initial phase. The body is simply trying to find its balance point. Later they are able to take charge of themselves with more energy and a greater feeling of being in control.

In order for the Tomatis® Method to work, as with any method, one must have the desire to change. Listening with the intent to change must be present. The objective of the method is to obtain a unity between hearing, auditory processing, and the listening function. If the desire is there, the listener can attain the potential of his body's capabilities. In other words, the listener should be able to listen as well as they hear. The Tomatis® Method helps people reach their potential, not reinforce their difficulties. It also provides a way to support or reinforce their potential. The potential was always there. For some, it just needed to be found.



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