

# Tomatis Neuro-Auditory Method

## Group Report



### Introduction

The Moera Community House has supported the Tomatis Method for a group of five children for three separate Tomatis listening programmes in 2018, tailored to the needs of the group, while keeping the individual need of each child in mind. This support was given with the intention to improve the children's auditory processing, learning outcomes, focus, attention and behaviour as part of the community organization's holistic approach to build community foundations that encourages well-being and financial security through providing continuity of care from pre-birth into adulthood as a commitment to developing family autonomy, resilience and resourcefulness with peer-to-peer investment back into the community so that a positive long-term change can be effected.

The TOMATIS® Method or TOMATIS® listening training is a non-invasive programme of sound stimulation developed by Dr. Alfred Tomatis in France starting in the 1950's. The purpose of the listening training is to improve and change sound perception. The stimuli are music, often Mozart or Gregorian chant or human speech/voice. The sounds are processed in an *electronic ear*, an advanced signal processor which treats and changes the signals with filters and time delays in a way the brain experiences as random. The resulting signal is transferred via *air and bone conduction* with the aid of special headphones.

In this report I have explained how the Tomatis Method works, what it consists of and how it was guided. Then the result for each child is given followed by a closer look at five assessments with an explanation on why the Tomatis Method influences reading handwriting and spelling; next a list of common improvements after the Tomatis Method and finally a conclusion.

The Tomatis Method has a broad impact on individual performance and all children attending the Tomatis listening programme have benefitted from it in different areas of development and learning. These changes will continue to integrate in the next half year and the children will be tested again in four months' time to follow development.



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## Tomatis Method

The theoretical platform for the Tomatis® Method is based on the ears' ability to discriminate between favourable and non-favourable sounds and passing this information to the brain to process. Blocking non-favourable sound signals will affect the ability to perceive and to process different frequencies of the audible spectra. If the perception of middle and high frequency sound signals is decreased it will impact the overall auditory perception and directly affect learning, attention and social adaptation.

Dr. Tomatis discovered three laws known as the **Tomatis effect**:

1. The voice can only reproduce the sounds (frequencies) that the ear can hear.
2. By restoring the ear's ability to hear, the voice immediately and unconsciously changes.
3. It is possible to permanently change the voice with auditory stimulation by using the sound system long enough.

## The Tomatis programme

- 10 consecutive days with a maximum of two hours of listening per day to classical music, mostly Mozart and Gregorian music; gated, to surprise the brain to create change.
- A break of 4 weeks to give time for the brain to integrate the newly learned behaviour.
- Another 10 consecutive days of listening to reinforce newly established patterns and to further development.
- A break of 6 to 8 weeks for integration purposes.
- Last 10 consecutive days of the Tomatis listening programme to reinforce and strengthen newly formed pathways and to further development.
- The programme for the group is chosen in such a way that it will be suitable for all children in the group.

During the listening programme children engaged in arts and crafts activities, puzzles, construction play, etc. for therapeutic reasons and relaxation.

## Organization

- Parents filled in a history form and questionnaires in relation to the Tomatis Programme. The questionnaires were repeated after the third programme
- Before and after each Tomatis Listening Programme a listening test was done to guide the Tomatis programme and monitor results
- A checklist of 'Possible changes after the Tomatis Listening Programme' was filled in by parents after the third programme



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- Observations during the Tomatis listening programme were made

The initial and re-assessment included:

- The Tomatis listening test
- Extra Lesson assessment
- Reading, spelling, handwriting, auditory sequential memory test and test of auditory analysis

## Results per child

From observations made during the Tomatis Method, questionnaires, assessments and other relevant information:

During the first Tomatis listening programme children were bonding together as a group; they came all from different schools. In the third session the group had come together as a whole and the children enjoyed each other's company.

Boy 1, age eight, joined the group because he was identified with auditory processing difficulties. He discontinued extra tuition during the time of the Tomatis Method.

Questionnaires indicated inattentive behaviour, difficulty with expressiveness, energy levels and behaviour. All of these improved after the Tomatis Method. Boy 1 had difficulty functioning within the group in the first two programmes. He was restless; unable to sit down for long (preferred standing), follow instructions and attending to tasks; difficulties in relationships. During the third programme he was able to engage with others appropriately; sit down for the duration of the time; had improved motor skills; better constructive play and focus. He no longer met the criteria for inattentive behaviour. The first assessment indicated that he was influenced by technological devices; this was no longer present in the second assessment. Spatial-orientation, body awareness and midline integration is developing as well as the ability to maintain information. He is now functioning well at school and no behaviour issues have been reported since attending the Tomatis Method.

Boy 2, age 11, attended the Tomatis Method because of anxiety, poor body coordination, organization and learning difficulties. Questionnaires indicated difficulties in attention, motor skills, expressiveness and anxiety. After the first three days he mentioned that he was calmer at school and his sleep had improved. He improved in attention, motor skills and expressiveness. His fine motor skills, improved together with his confidence in art, persistence in tasks and visual scanning. He was more tolerant of others. His body posture is slightly more upright and his gate has improved together with increased body awareness and slightly deeper breathing.



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Boy 3, age 7, joined the listening group because of learning and auditory processing difficulties. He has had many ear infections in the past and still has wax removed every six months. Questionnaires indicated difficulties with motor skills, expressiveness, speech and inattentive behaviour. All of these improved after the Tomatis Method and he no longer met the criteria for inattentive behaviour. He is now more able to pronounce speech sounds (e.g. ch) and syllables in words. His body awareness improved, especially related to his ears (more awareness of auditory environment). The first assessment indicated that he was influenced by technological devices; this was no longer present in the second assessment.

Girl 4, age 10, attended the group because she had auditory processing difficulties. From the questionnaires she showed improvements in attention; she no longer met the criteria for hyperactivity and there was a slight drop in anxiety/depression. She was able to express her improvements after the first Tomatis listening programme very clearly. She commented that she could hear and understand better what people were saying; her reading and writing had improved and that she felt more confident. Her body-awareness and spatial orientation has increased dramatically.

Note from her Tutor before the start of the second Tomatis programme:

‘I have noticed a huge difference. She started to make huge progress quite suddenly a few terms back, but since she has done the Tomatis Method, she is even more ‘right there’ present: more aware of what is happening in the lesson, more settled, less easily jumpy if someone walks into the room. She is also more aware that she does not know something and is more able to express this. Another amazing thing: she remembers what is going to happen and situations and schedules are clearer in her mind. This is something that she would never have managed before.’

Girl 5, age 10, has been diagnosed in the past with ADHD and might possibly suffer from foetal alcohol and drug syndrome. She also has learning difficulties. She became more able to show her caring, nurturing attitude towards others. The results show a huge change in spatial-orientation, body awareness and deeper breathing. Her ability to maintain information is slowly increasing. School mentions that she has been able to develop and maintain positive relationships, taken on lots of responsibilities around the school, has grown in confidence, is extremely knowledgeable about the Osmo application and experiencing some success with reading and maths. She has improved in focus, attention, memorization and speech (before was unable to say ‘four’ correctly).



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## Assessment results

See graph attached of pre- and post-tests. Scores are in age-levels.

Assessments	1	1	3	3	5	5	4	4	2	2
Rosner Auditory analysis	6	7	7	7	6	6	8	9	7	8
Auditory Sequential Memory	4.9	5.9	3.9	8.9	7.1	9.1	7.4	9.3	10.3	9.3
WOLD Sentence Copy	6	6	7	8	8	9	10	10	10	11
McKenzie Reading Test	6.6	9.3	7.9	9	6	6	9.9	10	9.9	11.3
Schonell's Spelling Test	6.8	6.8	7.3	7.5	6.8	7.1	8.3	9.4	10.3	10.9

Green: improved; blue: remained the same; red: regressed

The maximum score on the Rosner analysis Test is 9 years; indicating sufficient auditory analysis.

## Discussion of Results

Assessment	Comment
Rosner Aud. Analysis	4 (year 2 to year 3) and 2 (year 1 to year 3) improved nicely and 3 (year 1) and 5 (year 1) stayed the same. 1 (improved from 6 to 7 within year 1).
Aud. Sequential Memory	All children gained except for 2 (10.3 to 9.3) who had a slight drop. This might be due to him being extremely tired when retested. 3 (3.9 to 8.11) had the greatest improvement followed by 5 (7.1 to 9.1) and 4 (7.4 to 9.3), while 1 (4.9 to 5.11), made steady gains.
WOLD Sentence Copy Handwriting/Speed	3, 5 and 2 made steady gains and 1 and 4 stayed at the same level. 3, 5 and 1 handwriting was less developed at the start of the programme than 1 and 4.
McKenzie Reading Test	1 (6.6 to 9.3) made the biggest gain and 5 (6) stayed the same although her reading had become more fluent. 4 (9.9 to 10) showed slight improvement; her reading was more accurate and fluent in the second test, and 3 (7.9 to 9) and 2 (9.9 to 11.3) made great progress.
Schonell's Spelling Test	1 (6.8) did not show any improvement, and 3 (7.3 to 7.9), 5 (6.8 to 7.1) and 2 (10.3 to 10.9) made slight progress, while 4 (8.3 to 9.4) improved most (1 year and 1 month).



Auditory sequential memory had the biggest increase out of all above mentioned tests followed by the McKenzie Reading Test. This improvement occurred after the experience of the Tomatis Method and therefore the conclusion can be made that the Tomatis Method improves auditory sequential memory which is of great importance in regards to reading, writing, spelling, as well as maths. Low scores on the Rosner Auditory Analysis Test together with the Auditory Sequential Memory Test and Schonell's Spelling Test can be indicators that the child might be suffering from auditory processing difficulties.

## Auditory Processing and the Tomatis Method

**Auditory processing** is the ability to identify, interpret and attach meaning to sound.

**Auditory Processing Disorder** (APD) has been described by the American Speech Language Hearing Association (ASHA) as problems in one or more of the following auditory behaviours: sound localization and lateralization, auditory discrimination, auditory pattern recognition, the ability to process acoustic signals over time including perceiving sounds as separate when they quickly follow one another, and competing fore- and background sounds. APD can impact reading, spelling, following spoken instructions as well as confidence and self-esteem.

**Auditory memory** plays a crucial role in literacy: it is one area of **auditory processing** that directly impacts reading, spelling, writing and math skills. Children who have poor auditory memory skills may struggle to recognize sounds and match them to letters – a common symptom of a reading disability or dyslexia. It consists of two key elements.

1. **Auditory sequential memory** is the ability to remember a sequence of items/pieces of information. It is the ability to recite days of the week, the alphabet or numbers, or carry out orally given directions in the order presented. The order is of paramount importance. Many children with reading difficulties have trouble with sequencing and poor sequential memory which naturally affects their ability to read and spell.
2. **Working memory** is the ability to retain information and simultaneously process it (as is necessary for taking notes). Working memory is responsible for many of the skills children use to learn to read. Auditory working memory helps children hold on to the sounds letters make long enough to sound out new words.

**Auditory Analysis** is of importance for the progression in reading and writing, because it is the ability to synthesize individual sounds to form a word. Difficulty in this area can lead to the inability to blend individual sounds into a word (c/a/t), although the individual phonemes are known, or to break down the sounds within the word (te-le-phone). Phonological awareness, verbal short-term memory and rapid automatized naming, which reflect phonological processing, and speech perception in noise were found to be significantly affected in poor readers. Early intervention is crucial and can make a real difference to students with limited levels of phonological awareness”



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**Auditory discrimination** refers to the ability to hear similarities and differences between sounds. Difficulties in this area shows in not hearing the difference between a siren and a school bell, or in phonemic difference between pen/pin or big/pig. This affects the meaning of a word in a sentence, comprehension and spelling.

**Auditory foreground-background** is the ability to select and attend to relevant auditory stimuli and ignore the irrelevant. If this is disrupted the child will attend to everything equally. The teacher’s voice is lost in the background noises in the classroom or from the street. This significantly affects reading skills.

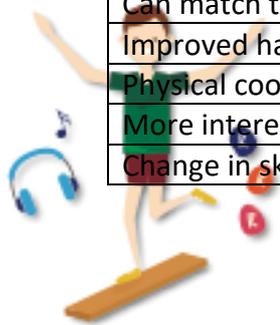
**Visual working memory** helps to remember what words look like so they can be recognized throughout the rest of a sentence. The Tomatis Method can improve vision because the auditory and visual systems are linked together. Auditory processing is as important for reading as visual processing, because *reading is reproducing sounds in your mind*. A study showed that both auditory and visual dyslexic people had **auditory sequential impairments**. (Archives of clinical neuropsychology, Edublox)

The Tomatis Method is guided by the Tomatis Listening Test, information and observation. The listening test tests air and bone-conduction, sound localization, lateralization and auditory discrimination, all related to auditory processing. As explained above the Tomatis Method can improve all of these areas, including faster processing of sound and the ability to hear in noisy environments, therefore the Tomatis Method is highly recommended to improve auditory processing, which affect reading, writing, spelling as well as Maths.

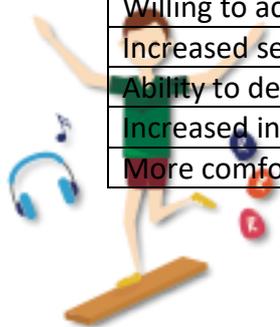
## Common Improvements after Tomatis® Method Training

The following list is made up from information obtained from parents, caregivers, observations made during the Tomatis listening programme and others that have worked closely with the children.

Physical Changes	1	3	5	4	2
More upright posture					x
Increased or more natural eye contact					
Positive change in sleep pattern					x
Change in eating habits					
More appropriate levels of physical activity					
Less nervous energy			x		x
Face and body appear more relaxed	x		x	x	
Voice softens or strengthens			x		x
Sings or plays more with voice (sounds)	x	x			
Increased clarity of speech	x	x	x		
Can match tones more accurately	x				
Improved handwriting		x	x		x
Physical coordination improves		x			x
More interest in physical self					
Change in skin tone and/or colour					



More touching and hugging					
Breathing more deeply and regularly	X	X	X	X	
More consistent energy level					
Less confusion of left and right			X		
Better sense of rhythm	X				
Fewer headaches				X	
Improved reflex responses					
Improved vision	X		X		
<b>Mental changes</b>					
More motivated			X		X
Better memory for names	X		X		
Improved short-term memory				X	
Thinking before acting					X
Improved attention span	X	X	X	X	
More open-minded					X
Less bothered by background noises	X	X		X	
Increase in vocabulary		X			
Improved reading skills	X	X		X	X
Does not need instructions repeated				X	
Improved spelling				X	
Initiates reading					
Improved socialization	X		X		
Improved organization					
Less irritable					X
Less anxious or tense					X
Maths seems easier				X	
Better at starting/finishing projects			X		
Sequencing improves			X	X	
Better time-management skills					
Improved memorization skills			X	X	X
Improved sentence structure					
More inquisitive				X	
<b>Psychological changes</b>					
More animated					
Less overwhelmed	X			X	X
More talking/communicating					
More gentle with animals and/or people			X		X
Healthier emotions	X		X		X
Appropriate social contact/boundaries	X				
Increased sense of humour					
Willing to accept nurturing					
Increased self-confidence			X	X	
Ability to deal with conflict	X				
Increased independence					X
More comfortable making eye contact					



Change in friends	x		x		
New interests	x				
More sensitive to voice tone					
More sensitive to innuendo	x				
Less defensive			x		
More responsive to the environment	x				
More expressive					
More adventurous					
More tolerant	x				x
More thoughtful					x
More patient					x
More calm and relaxed, less anxiety					
More affectionate					
More flexible	x				
More outgoing					

## Conclusion:

A group of five children attended the Tomatis Sensory Neuro-Auditory Programme 'The Tomatis Method' for three intensive listening training sessions. Pre- and post-assessments and questionnaires were used to measure results together with Tomatis Listening Tests. The children were happy to attend and enjoyed the arts and crafts given for therapeutic reasons.

This report has shown that the Tomatis Method is an effective tool to enhance learning and behaviour and builds developmental foundations in a broad sense, physically, mentally and psychologically. These foundations will continue to integrate in the next four to six months. All children have made major improvements in literacy, behaviour, auditory analysis, and memory after experiencing the Tomatis Method. In regards to the individual needs of the children further Tomatis training in four months is highly recommended to further progression.

Although each child had different needs according to the tests performed before starting, they have all made progress in different areas depending on their initial difficulties. This is a normal result of a Tomatis intervention programme and shows how powerful Tomatis is in adapting to each individual's needs.

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