

New Advances in Tinnitus Assessment

Speaker: Philippe Fournier, Ph.D.
Postdoctoral fellow at the Centre national de la recherche scientifique (CNRS), Université d'Aix-Marseille, France

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Canadian Academy of Audiology is a professional association dedicated to enhancing the role of audiologists as primary hearing health care providers through advocacy, education and research.

Salima Jiwani - Host

Dr. Salima Jiwani is Past President of CAA, and is the clinical and research Director of Audiology at AudioSense Inc., a centre of excellence in Hearing and Balance Healthcare.

Salima earned her Ph.D. in auditory neurophysiology with the Institute of Medical Science at the University of Toronto. She completed her doctoral work at the Cochlear Implant Lab at the Hospital for Sick Children in Toronto, where she worked with children and adolescents who are deaf and have used a cochlear implant to hear for most of their lives.



Canadian Academy of Audiology (CAA) Webinar Nov 2018

Speaker: Philippe Fournier, Ph.D., Postdoctoral fellow researcher, M.Sc.S., Audiologist, FAAA

Philippe Fournier is currently a postdoctoral fellow at the Centre national de la recherche scientifique (CNRS), Université d'Aix-Marseille, France. He is also the founder, and past CEO and president of the Quebec Association of Speech-language Pathologists and Audiologists (QASLPA) from 2011-2014.



Philippe's research has been dedicated to improve diagnostic measures and therapy options for tinnitus and hyperacusis. Philippe also has previous experience as a clinician in a private practice setting in Montreal and as audiology clinical instructor for the audiology clinic of the Université de Montréal.

New advances in tinnitus assessment



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Philippe Fournier
Ph.D., M.Sc.S. Audiologist, FAAA

CNRS & Université d'Aix-Marseille
Project director: Arnaud Norena
NIA Laboratory

CANADIAN ACADEMY OF AUDIOLOGY WEBINAR
November 20, 2018



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Who is this guy?

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- Clinical audiologist
 - Private practice Montreal
 - Tinnitus, hyperacusis, hearing loss
- Researcher
 - Tinnitus (assessment & treatment)
 - Hyperacusis (assessment & treatment)
 - Otalgia, acoustic shock



Force-choice pitch matching

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- **Good side**
 - Can be done with an audiometer
 - Can be helpful for the patient
 - Can be useful for some acoustic treatment
- **Bad side**
 - Poor test-retest reliability
 - Difficult for the patient (sometimes frustration)
 - Requires high-skilled clinicians
 - Time consuming
 - More than one frequency composing tinnitus?

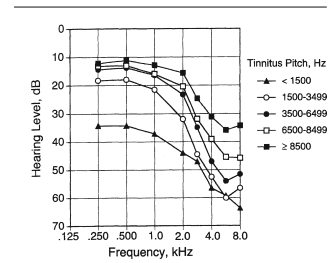
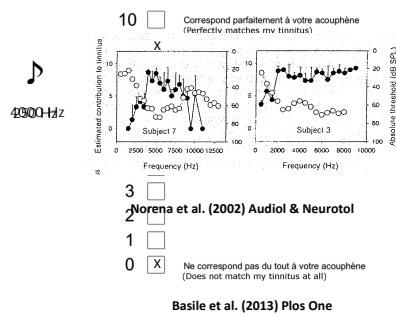


Fig. 5.5 Mean hearing threshold of the right ear for individuals in each group of patients according to the pitch of their tinnitus. Data are from patients who attended a tinnitus clinic. From Henry et al. [19]

Tinnitus likeness-spectrum



Spectrum pitch matching

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- **Good side**
 - Controlled by the patient (may decrease frustration)
 - Test a lot of different frequencies
 - Provide a spectrum rather than one single frequency
- **Bad side**
 - Not commercially available
 - What to do with all of these information's?

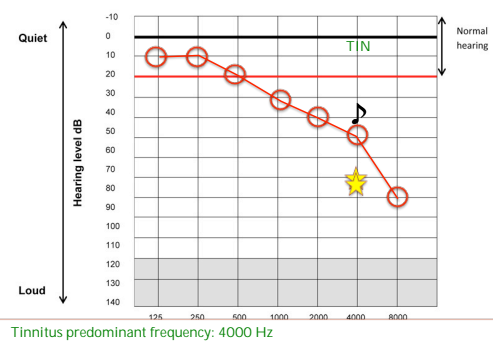
Loudness matching

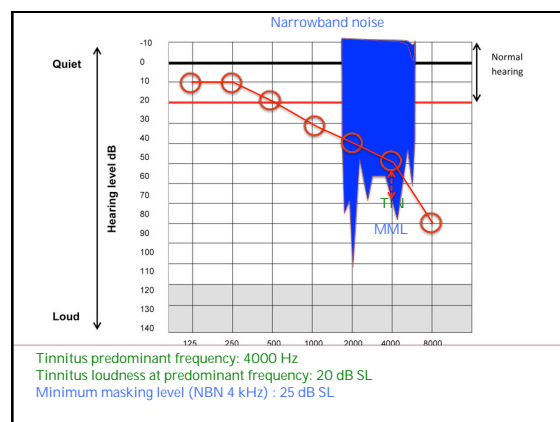
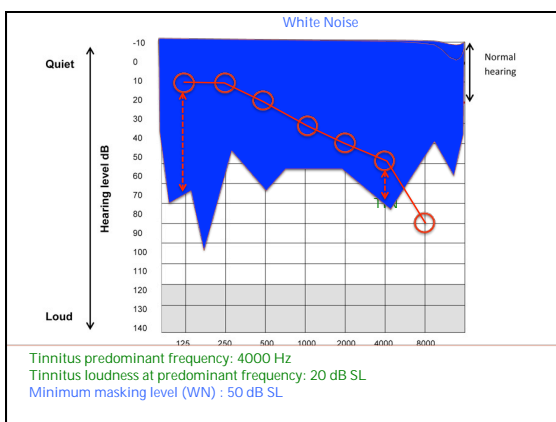
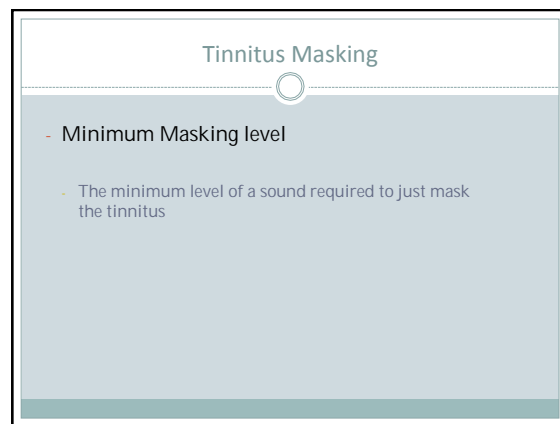
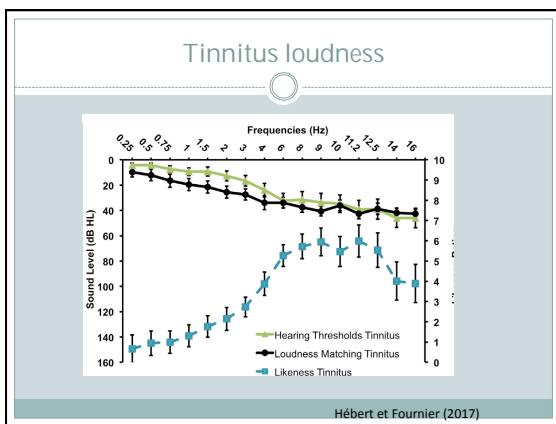
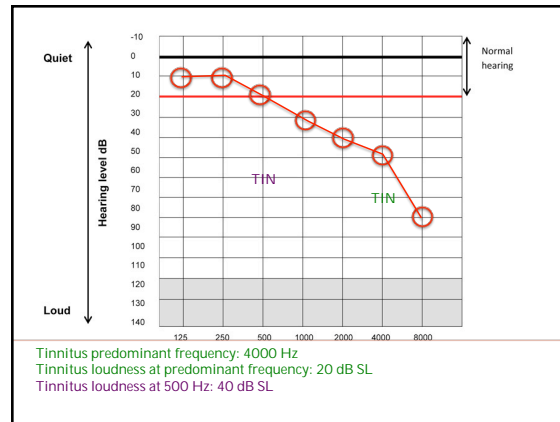
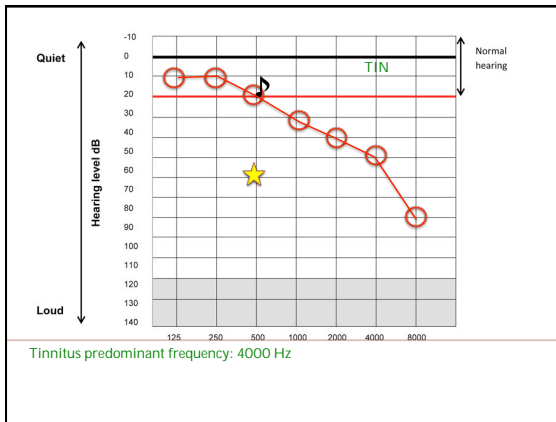


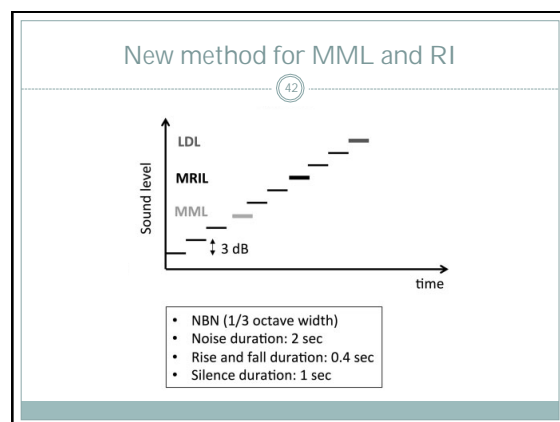
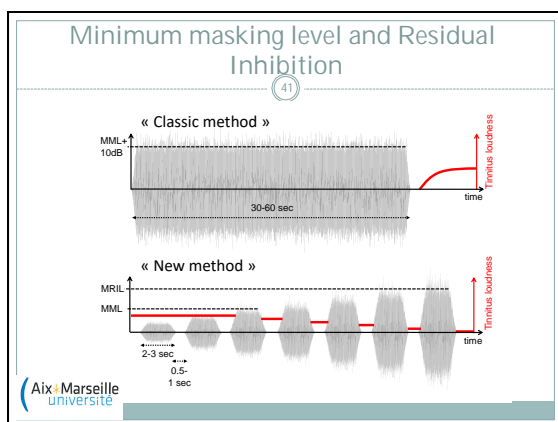
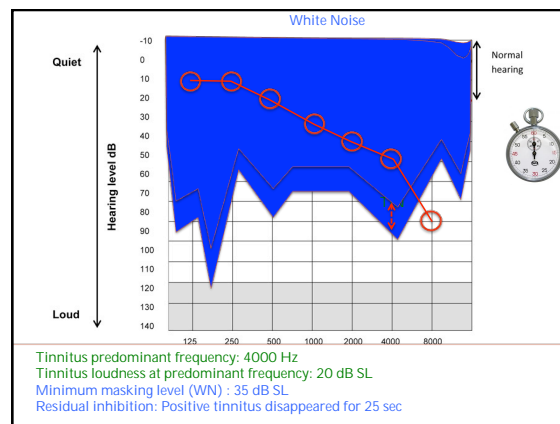
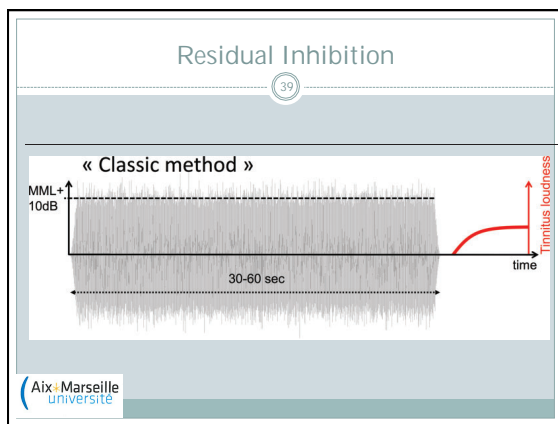
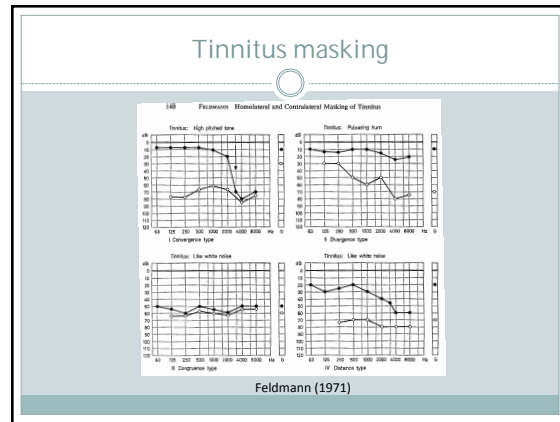
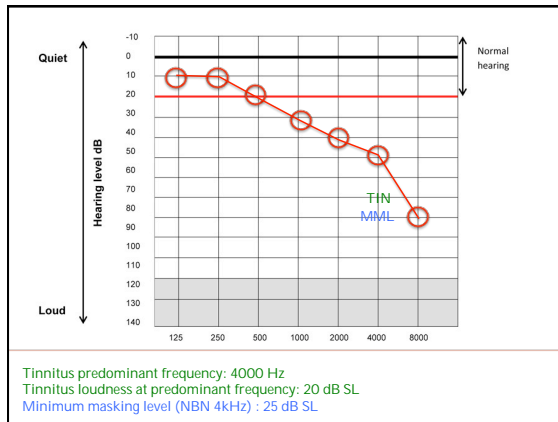
- Technique:
- Continuous presentation (ex: potentiometer)
 - Passive method vs. Active method

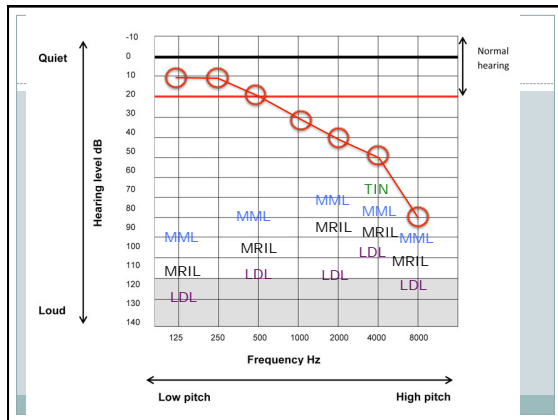


- Difference between methods:
- at the tinnitus predominant pitch ?
 - For every frequency ?
 - In a region with NH (ex. 1 kHz) ?
 - Ipsilateral vs. contralateral









Participants

Marseille site	Lyon site
n = 34	n = 34
mean age: 50.6, SD: 12.9	mean age: 58, SD: 14.3
Bilateral tinnitus mostly (Bilateral, n=27, Unilateral n = 7)	Unilateral tinnitus only
Goal: Explore the effect of stimulus duration and spectrum of the new method	Goal : Validate the clinical application of the new method

Methods

Both sites
<ul style="list-style-type: none"> Hearing test (.25 to 12.5 kHz) Tinnitus pitch and loudness matching MML (new method) MRIL (new method)
Lyon site only
<ul style="list-style-type: none"> Loudness discomfort levels Classical RI testing

Results

CHARACTERISTICS OF MML AND MRIL
DISTRIBUTION

Distribution

A total of 68 tinnitus patients tested :	
Total MML : (n=67)	98.5 %
Total MRIL : (n=59)	86.7 %
Residual inhibition was categorized as follows:	
Complete inhibition	69.1 %
Partial inhibition	11.8 %
Persistent inhibition	5.8 %
Increase tinnitus loudness	5.8 %
Change in tinnitus pitch	2.9 %
Others (n=3)	4.4 %

Fournier, et al. (2018) Trends in Hearing

Results

INDIVIDUAL CASES

