

# **Effectiveness of Residual Inhibition Therapy (RIT)**

An Ontario Trillium Project

**The Canadian Hearing Society, Toronto, Ontario, Canada**

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## **Introduction**

Residual Inhibition Therapy (RIT) is the phenomenon that occurs when tinnitus sufferers listen to a specific sound for a short while and then notice that their tinnitus is gone, or is significantly reduced in volume, for a period of time. This brief reduction or suppression of tinnitus can provide some relief and let the sufferers exert some control over the problem. The purpose of this study was to gain information on the effectiveness of RIT as a treatment of tinnitus.

## **Methodology**

Subjects for this study were recruited utilizing an advertisement that was placed in *The Metro* the largest citywide daily publication in Toronto. More than 100 inquiries were received. The potential subjects were sent information regarding RIT and a package that included: 2 tinnitus questionnaires, a physician referral form and an Informed Consent form. The first 50 applicants to successfully return a completed RIT package were selected to participate in the study.

## **Assessment**

The selected subjects ranged from 15 to 77 years in age with 30 males and 20 females. Each subject underwent both an audiological and tinnitus assessment. The audiological assessment included standard pure tone, bone, and speech testing in a sound treated booth and reflected a wide range of audiometric findings from normal hearing to severe hearing loss.

All participants were required to have a signed medical consent from their physician giving them permission to participate in the study.

Participants completed two questionnaires. Pre and post measures were obtained for comparison in order to assess RIT influences on varying parameters relating to tinnitus. *The Tinnitus Handicap Questionnaire* assessed the subjects' psychometric properties of their tinnitus including social, emotional, and behavioral tinnitus effects; tinnitus and hearing; outlook on tinnitus. Scores for each area were obtained. A *Tinnitus/Hyperacusis History Questionnaire* was also distributed where the subjects ranked their tinnitus in terms of severity, annoyance, effect on life and as an overall problem for them. *The Tinnitus and Hyperacusis Follow-Up Interview Questionnaire* was completed at the end of the study in order to measure any improvements in the above areas following enrolling into the RIT study.

The tinnitus assessment was performed utilizing the AudioMedic Tinnitus Management Software system. Using this computer software, the subjects' tinnitus was matched for both frequency and intensity. A compact disc was generated with a simulation of the subjects' tinnitus recorded on to the CD. Separate tracks of the subjects' tinnitus were generated including a pure tone track, a warble tone track, and narrow band noise track. Each track was produced at the subjects' reported frequency and intensity of their tinnitus.

Subjects were asked to listen to each track, at 15-minute intervals, for one consecutive week and to maintain a diary of results following listening to a track. They were then asked to return at the end of the three-week period in order to report their impressions and to document any residual inhibition effects.

### **Findings**

Of the original 50 participants, 31 completed the study, or 62%. Reasons for participants not completing the study included: motivational factors and stress worsening tinnitus as a result of heightened awareness of the issue.

In analyzing the diary reports from the specific tracks, the most significant finding in this study was that subjects reported that track 1 (pure tone stimulus presentation) was on average 20% effective in decreasing tinnitus due to residual inhibition. Track 2 (warble tone) was on average 30% effective and track 3 (narrow band noise) was on average 16% effective in decreasing tinnitus due to residual inhibition.

When asked which track was felt to be most helpful, 38% reported track 2 (warble tone), 25% track 1 (pure tone), and 13% track 3 (narrow band noise).

In comparing pre and post psychometric properties from *The Tinnitus Handicap Questionnaire*, it was revealed that there was on average a 12% improvement for social, emotional and behavioral tinnitus effects; an 8% improvement with regards to tinnitus and hearing and an average 7% improvement for the participants' outlook on their tinnitus.

When subjects were asked to rank on a scale from 1 to 10 the severity of their tinnitus, how much it annoyed them and its overall effect on their life, results from *The Tinnitus and Hyperacusis Follow-Up Questionnaire* revealed that on average, subjects reported a 5% improvement in these areas. Additionally, there was an overall improvement of 5% in terms of the percentage of the time that they were aware of their tinnitus.

When asked subjectively about their tinnitus, 31% reported it was better, 41% reported it was the same and 19% reported their tinnitus was worse after having undergone RIT for a period of 3 weeks.

When subjects were asked if they were glad they participated in the study, 81% reported “yes” to this question.

## **Conclusions**

When compiling all of the above factors, it was concluded that in this study, RIT was in the range of 20-30% effective in providing either actual inhibition or psychological relief from their tinnitus after having undergone the process for a period of 3 weeks. While the majority of subjects indeed did not report a radically significant change, it does appear that RIT has a higher success rate than the reported 5-10% for other types of alternative treatments such as biofeedback, acupuncture, chiropractic, breath training, herbal remedies, massage, hypnosis, and dieting. Tinnitus Retraining Therapy (TRT) still has the highest success rate of 80% in treating tinnitus.

One consideration that may influence the success of RIT is the level of tinnitus expertise by the examiner. For instance, in this study, of the three audiologists who evaluated the subjects, two had no particular extra training in tinnitus while one had certification in TRT. The variability in background knowledge of tinnitus and overall practice in tinnitus assessment may be a potential factor.

Inability to match the exact pitch of a subjects’ tinnitus to a specific sound may also affect RIT outcomes. This is most often seen in individuals having more than one overlapping pitch that constitutes their tinnitus.

The longitudinal effects of RIT are unknown at this point. Given more time, the tendencies for residual inhibition may be more evident. An overwhelming majority (90% plus) of the subjects reported that they would not want to return the CD at the conclusion of the study and were interested in using it on their own in the future.

While RIT does not appear to be an outright cure for tinnitus, its implications are positive. It may be utilized as a more economical alternative with relative limited financial risk for clients wanting to explore a treatment for their tinnitus, but are not prepared for the subsequent expense of TRT.

Audiologists at the Canadian Hearing Society will continue gathering data on the effectiveness of RIT as more clients opt for this service. The results of this initial study will be available to the public in the coming months through a variety of media outlets.

25 February 2003

This is in response to the study “Effectiveness of Residual Inhibition Therapy (RIT)” completed by the Canadian Hearing Society’s audiologists Rex Banks, Maha Atrach, and Tommy Choo. The study appears to have been quite completely done. My opinion is that the results are even more positive than one’s initial interpretation may be on first reading.

Some of the statistics quoted are very important, some are of lesser importance. Please review the following comments:

1. Overall, I find the results very positive.
2. The 50 applicants initially selected were truly an unbiased sample, the first 50 to apply!
3. The success/failure statistic is going to vary widely when using controlled subject’s groupings with similar backgrounds, which this study didn’t.
4. CHS found:
  - A: 30% of the population tested assessed FM warble tones to be successful in effecting residual inhibition
  - B: 20% of the population tested assessed pure tones to be successful in effecting residual inhibition
  - C: 16% of the population tested assessed narrow band noise to be successful in effecting residual inhibition.

My clinical experience has also been that FM warble tones are most effective.
5. 38% of the population tested found FM warble tones to be helpful. I assume that this means residual inhibition and other benefits such as masking, etc.
6. During a matter of just the short few week’s duration of the study, 12% of the participants improved for social, emotional, and behavioral tinnitus effects; 8% improved with regards to tinnitus and hearing and an average 7% improved in their outlook on their tinnitus. This was during a short period of time; long term implications may be significantly better.
7. 31% reported that their tinnitus was better, following this process.
8. “...it does appear that RIT has a higher success rate...than other types of alternative tinnitus treatments...”

9. TRT indeed, has a higher success rate. In the opinion of this writer (who has no relationship to CHS), this success may be due, in large part, to the fact that clients are more carefully selected, the clients are motivated enough about improvement that they are willing to spend substantial amounts of money and invest significant amounts of time. Such a commitment may improve client dedication to task, and foster a very positive outlook.
10. This statement really tells it all: **“An overwhelming majority (90% plus) of the subjects reported that they would not want to return the CD at the conclusion of the study and were interested in using it on their own in the future.”** This suggests that 90% of the subjects have found the process to be helpful.
11. This statement is also very important: **“While RIT does not appear to be an outright cure for tinnitus, its implications are positive.”**

All in all, it appears that these people, who were not TRT candidates, **would not have received help if not for the application of the AudioMedic (now Quiescence) tinnitus management software!**

Those are my thoughts. Your comments on my comments, please!

Sincerely yours,

Gordon Whitehead, B.S., M.A., Aud (C), Audiologist

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P.S. I have had even better, but similar responses to this aspect, and other aspects of the software. This is probably from longer acquaintance with it, and application of its other benefits such as custom masking and custom programmable hearing aid fittings.