

# 이명 재훈련 치료

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## Tinnitus Retraining Therapy

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### 서 론

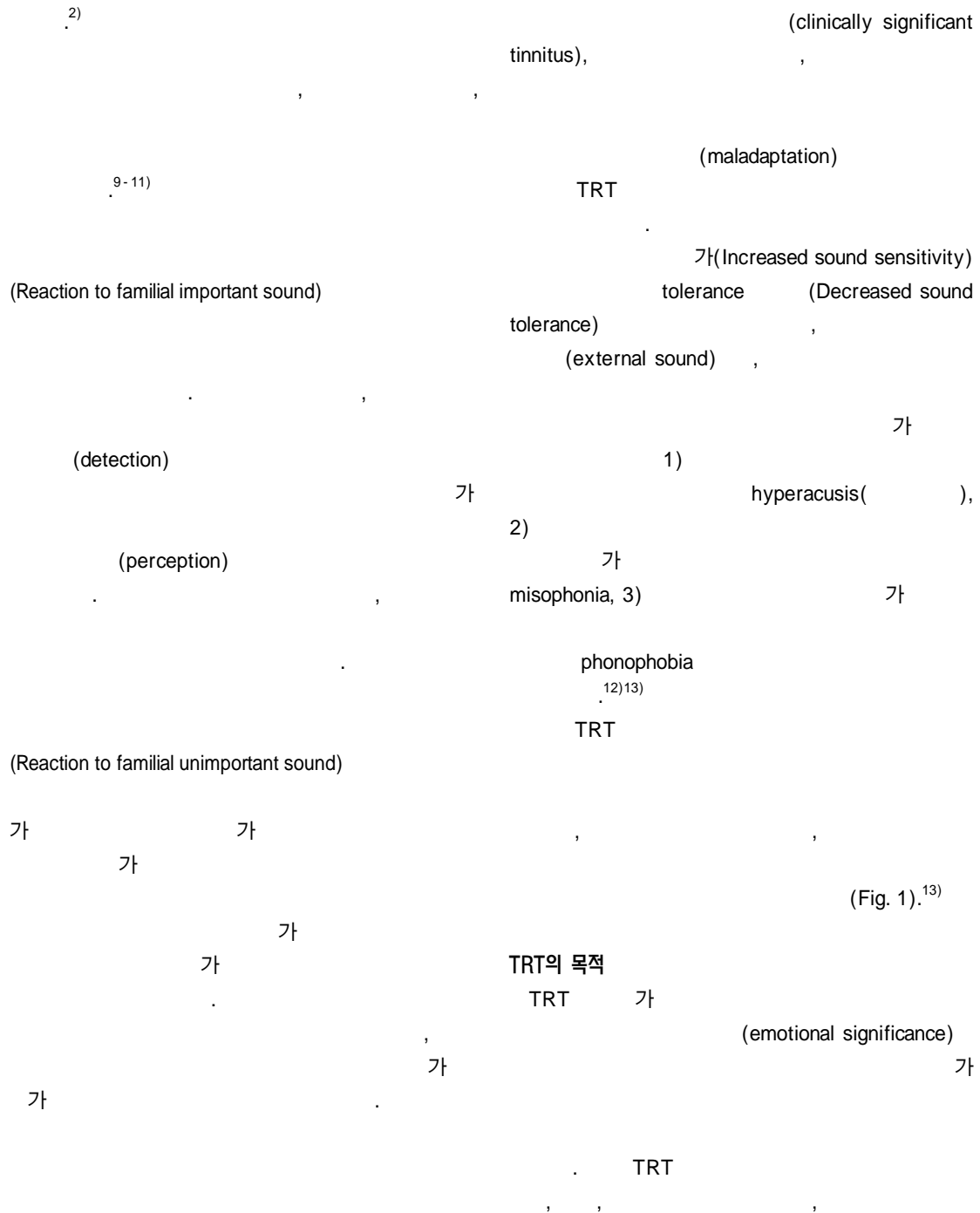
(Tinnitus retraining therapy ; TRT)  
 1990 Jastreboff  
 80%  
 1-6)  
 7)8)  
 , TRT가 가  
 guideline

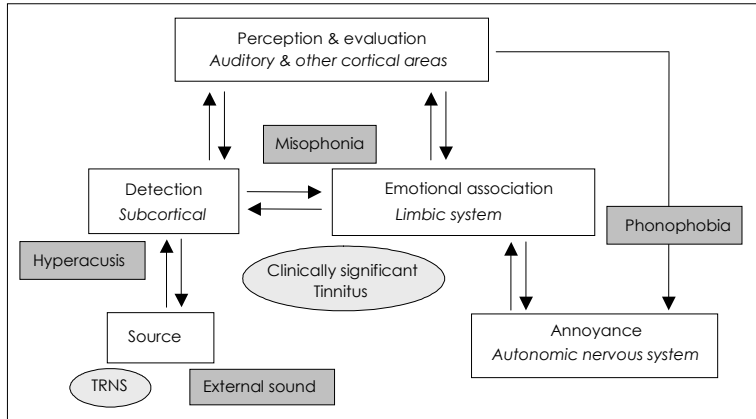
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### TRT의 기본적 개념

TRT  
 가 1)  
 (tinnitus related neuronal signal)가  
 (auditory system) 2)  
 가 가  
 (limbic system) (autonomic nervous system)  
 가 auditory processing  
 2)3)  
 , TRT  
 (habituation of reaction)  
 (habituation of perception)

TRT의 신경생리학적 모델(Neurophysiological model)  
 1990 Pawel Jastreboff





**Fig. 1.** Jastreboff's neurophysiological model of tinnitus and increased sound sensitivity (From Hazell JWP, Sheldrake JB, Graham RL. Decreased sound tolerance : predisposing factors, triggers and outcomes after TRT. In : Patuzzi R, ed. Proceedings of the Seventh International Tinnitus Seminar, Fremantle 2002 ; 255-261.).

**Table 1.** Stages of protocol for TRT

- 1) Initial interview
- 2) Audiologic evaluation & medical evaluation
- 3) Diagnosis and treatment category
- 4) Directive counseling
- 5) Sound therapy fitting/counseling
- 6) Follow-up/counseling

- 가 2)  
(categorization)  
,  
. TRT
- 1) Loudness of tinnitus : 가
  - 2) Awareness of tinnitus : 가
  - 3) Annoyance of tinnitus : 가
  - 4) Effect of tinnitus on life : awareness  
annoyance가  
( )  
visual analogue scale 0~10(0~100%)  
가  
Tinnitus handicap inventory Tinnitus han-  
dicap questionnaire

**재훈련(Retraining)의 의미**

(neuronal networks)  
(reprogramming)  
(resetting) 6 24

**TRT의 적용 방법**

TRT  
TRT  
Table 1 .<sup>1)8)</sup>  
초기 면담(Initial interview)  
1) 가

.<sup>14)15)</sup>  
청각학적 및 내과적 평가  
(Audiologic & medical evaluation)  
(hyperacusis)  
category  
가 가

가 지시적 상담(Directive counseling)  
 가 TRT (overcompensation)  
 가 (counseling)  
 가 가  
 가 (negative association)

TRT 가 1:1  
 (Table 2).

진단 및 치료 분류(Diagnosis and treatment category)

category (habituation of reaction) 가  
 Jastreboff TRT 가  
 (Table 3). TRT  
 가

**Table 2.** Audiologic evaluation for tinnitus patients in Kangnam St. Mary's Hospital

1) Pure tone audiometry	가	가
2) Impedance audiometry		
3) Speech audiometry		(negative association ;
4) Auditory brainstem response		
5) Otoacoustic emission : SOAE, TEOAE, DPOAE (DP audiogram)		
6) Tinnitogram : Tinnitus matching for frequency & loudness		)
7) Minimal masking level		가
8) Mixing point		
9) Hyperacusis test		

**Table 3.** Patient categorization in tinnitus retraining therapy

	HyperA	Kindling	HL	Impact	Treatment
0	-	-	-	Low	Counseling only
1	-	-	-	High	NG, Mixing point
2	-	-	+	High	HA, env. sounds
3	+	-	NR	High	SG set above threshold of hearing
4	+	+	NR	High	SG set at the threshold ; very slow increase of sound level

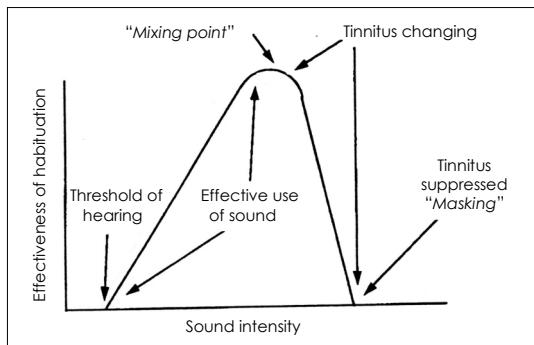
HyperA : hyperacusis, Kindling : prolonged sound-induced exacerbation of tinnitus/hyperacusis when the effects persist to the following day, HL : subjective hearing loss having a significant impact on patient's life, Impact : the extent of impact of tinnitus and/or hyperacusis on patient's life, NR : not relevant, SG : sound generator, HA : hearing aid, Env sound : environmental sounds (From Jastreboff PJ, Jastreboff MM. Tinnitus retraining therapy (TRT) as a method for treatment of tinnitus and hyperacusis patients. J Am Acad Audiol 2000 ; 11 : 162-77. Jastreboff PJ, 2000)

1) , 2) , 4) , 6~8 가 가  
 3) TRT : , 5) (mixing point) (Fig. 2).  
 (sound therapy)

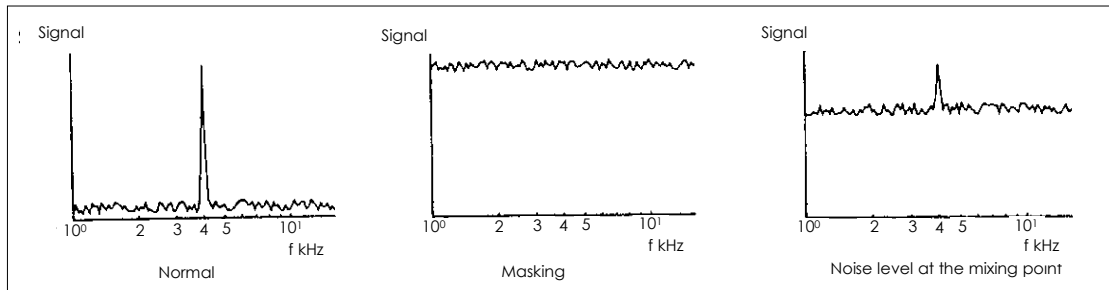
**소리 치료 맞춤/상담(Sound therapy fitting/Counseling)**

가 , 가  
 TRT  
 .<sup>16)17)</sup> Category 0 (Fig. 3). TRT  
 (Avoid silence)  
 (environmental sounds)

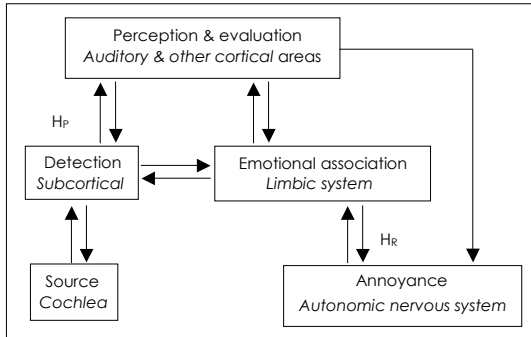
. Category 1, 3, Category 2  
 1) 가 (sound enrich environment)  
 2) 2 가 (communication ability)  
 가  
 (straining to hear)  
 (vicious cycle)



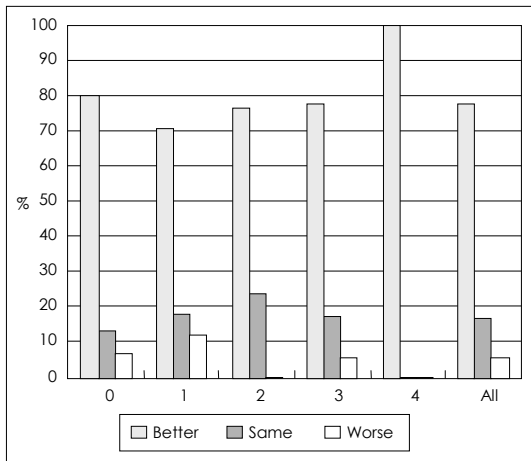
**Fig. 2.** Habituation and level of sound therapy (From Gold SL, Gray WC, Jastreboff PJ. Selection and fitting of noise generators and hearing aids for tinnitus patients. In : Reich, Vernon ed. Proceedings of the 5th International Tinnitus seminar, Portland, Oregon, 1996 ; 312-4.).



**Fig. 3.** Relation of Tinnitus Signal to Neuronal Activity (From Jastreboff PJ, Gray WC, Gold SL. Neurophysiological approach to tinnitus patients. Am J Otol 1996 ; 17 : 236-40.).



**Fig. 4.** Habituation of reactions (HR) & perceptions (HP) induced by tinnitus retraining therapy (From Jastreboff PJ, Gray WC, Mattox DE. Tinnitus and hyperacusis. In : Cummings CW, Fredrickson JM, Harker LA, Krause CJ, Richardson MA, Schuller DE. Otolaryngology Head & Neck Surgery. 3rd Ed. St. Louis : Mosby, 1998 ; 3198-222.).



**Fig. 5.** Therapeutic efficacy of TRT according to category (N=121).

**추적 관찰/상담(Follow up/Counseling)**

TRT

가

3~4

monitoring

(point prevalence)

10~20%

가

. 1990

TRT

TRT  
(negative counseling)

가

중심 단어 : Tinnitus retraining therapy.

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