

REPEATED REFLEX DECAY TESTING*

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The present study was designed to find the susceptibility of normal hearing listeners to noise induced hearing loss (permanent threshold shift). This "Repeated reflex decay testing" is among the objective indices of susceptibility to auditory fatigue and can be considered as a more reliable measure than psycho-acoustic tests for susceptibility to noise induced hearing loss.

The present study was designed to investigate whether there is any relationship between the reflex decay for repeated stimulus presentations and magnitude of acoustic reflex.

Also the present study was designed to have information regarding the frequency of the stimulus eliciting the reflex and the decaying process.

This study was carried out in a sound treated room at All India Institute of Speech and Hearing, Mysore. Twenty three (12 females and 11 males) normal hearing subjects were tested. The subjects were divided into four groups to measure their "Repeated Reflex Decay" at four different sensation levels and at four different frequencies. Madson ZO 17 Immittance Audiometer was used. The experimental testing was carried in two stages.

Stage—I : The acoustic reflex thresholds (contralateral stimulation) using T & R setting of the instrument were measured.

Further, "Repeated Reflex Decay" was observed at single frequencies by presenting the acoustic stimulus repeatedly (five presentations). Selection of the frequencies for any experimental session was random. Two frequencies were selected for one experimental session and two for another experimental session. This was done to control the interactive effect of different frequencies so that decaying process at any one frequency does not affect the decay at another frequency.

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their tension while the cushions may harden and crack. Therefore, it is important to inspect and reissue EPDs regularly, i.e., 2-12 times/year.

6. Abuses :

Employees have been known to tamper with their EPDs in an attempt to relieve discomfort. Springing headbands to reduce tension, cutting flanges of ear inserts, drilling holes through plugs or muffs are often resorted to at the cost of protection.

7. Speech Communication :

A Common misconception on the part of EPD users is that communication is adversely affected by the use of EPDs. However, research in this area demonstrates that this contention may hold good only at low levels. At moderately high levels EPDs do not have a significant effect on speech discrimination. Further, at high levels—exceeding 85 dBA—EPDs actually improve speech discrimination for normal hearing individuals. As use of EPDs is usually prescribed only when noise levels exceed 85 dB, the wearer should not have difficulty in listening to speech.

These problems explain why the real world attenuation of EPDs is much lower than laboratory data would indicate. As such lapses could result in heavy repercussions on the health and safety of personnel, it is obvious that avenues must be sought to encourage employees to utilize their EPDs effectively.

Motivating Employees :

Educating employees on the importance of protecting their ears could be achieved through films, pamphlets, posters, slogans and lectures. Compulsory training in proper insertion and maintenance of ear protectors could be prescribed for all new recruits. The management could mark off 'danger zones' prominently making it mandatory that EPDs be worn in such areas. Surprise checks by safety personnel would be a good tactic. Punitive measures, in steps, may be introduced when rules are flouted—first a verbal warning, followed by a written warning, then a brief suspension with loss of pay, etc., At the time of annual or biannual hearing evaluation, those employees whose EPDs are in good condition and whose hearing thresholds have remained in the same range should be given incentives. Installation of self-monitored listening devices at the entrance to the workspot would serve as another motivational technique. Employees should be encouraged to subject themselves to the test in the morning prior to work and in the evening before leaving. The tone which was audible in the morning but not after provides evidence that the day's noise exposure has taken its toll.

Stage—II: It consisted of procedure to determine the average magnitude of the acoustic reflex at 2 KHz in subjects selected from 15 dBSL and 20 dBSL groups.

The following conclusions have been drawn :

1) The subjects who showed " Repeated Reflex Decay " also showed greater magnitude of acoustic reflex and the subjects who did not show reflex decay showed less magnitude of acoustic reflex.

2) Anne Zachariah (1980) concluded that subjects who show greater magnitude of reflex are susceptible to noise induced hearing loss. Since the subjects who show greater magnitude of reflex also show decay for repeated reflex decay test, it may be concluded that the subjects who show decay for repeated test can be considered susceptible to noise induced hearing loss.

3) Repeated reflex decay is greater at high frequencies than at low frequencies, indicating that reflex decay is a frequency dependent phenomenon.

4) Greater amount of " Repeated Reflex Decay " is obtained at higher sensation level than at lower sensation levels.