A Comparison Between Two Methods of Recording Vestibular Evoked Myogenic Potentials (VEMPs)

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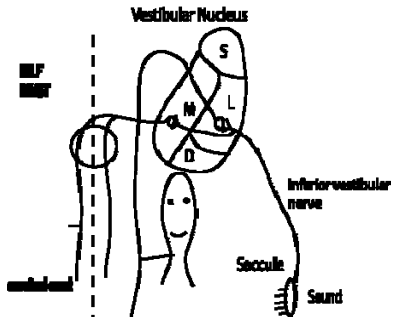
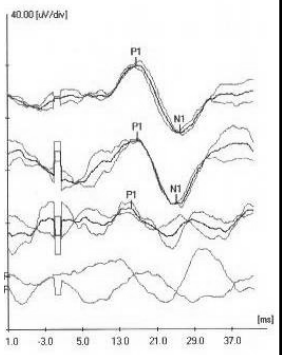
VEMPs



www.dizziness-and-balance.com/testing/vemp.html

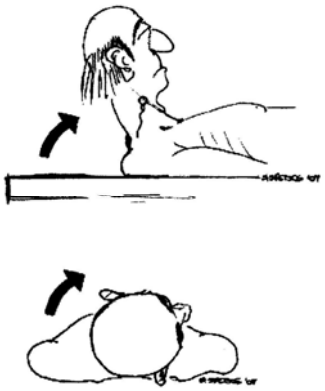
VEMP Waveform

Average values of P1/N1:		
	P1	N1
Age 20-40	16.2 +/- 2.5	24.0 +/-2.6
Age 41-60	16.1 +/- 2.2	24.0 +/- 2.1
> 60	16.1 +/- 1.6	23.4 +/- 1.6



Basta, Todt & Ernst (2005)

Two Recording Methods



Eleftheriadou et al (2008)

Research Question

1. Is there a significant difference in VEMP responses elicited with monaural versus binaural recording methods?

Methods

- Questionnaires/History
- Otoscopy
- Tympanograms
- Hearing evaluation
- Monaurally and binaurally recorded VEMPs.
  - Threshold and latencies.

Participants

- 15 participants.
  - Ages 21 – 64.
  - Firearm experiences: 7 – 55 years.
  - 40% used hearing protection with hunting.
- 7 out of 15 with hearing loss.
  - 57% used hearing protection with hunting.
  - 3-6 kHz PTAs ranged from 11.7 – 95 dB HL.
  - Asymmetry of at least 15 dB present at one frequency.

Two Recording Methods – Threshold Results

Table 1.

Mean Values for Threshold in Binaural and Monaural Test Conditions

Category		Test Condition	
		Binaural**	**Monaural****
1	**Mean**	114.67	110.00
	S.D.	6.11	5.67
2	**Mean**	115.00	110.00
	S.D.	6.55	5.35

Significant differences were found between the two test conditions (**p < .01), with no difference between ears in this category.

Within the Test Modes - Results

- Compared latencies at threshold to latencies at 5 dB above threshold within each category and recording method.
  - Results were inconsistent.
  - Differences found indicated longer latencies at threshold when compared to +5 dB.

Comparing to Previous Research

Measurement	Previous Research	This Research
Thresholds	Not previously investigated.	5 dB Lower in Monaural Method.
Latencies	No difference.	Longer N1 Latencies in Monaural Method.

Wang & Young (2003), Sazgar et al. (2006), Wang & Young (2007)

Previous Research

Previous Research	This Research
Identified delayed/absent VEMPs with high frequency SNHL > 40 dB.	All participants had present VEMP responses.

New Questions Raised:

- No threshold search used in these studies?
- Then what does delayed/absent mean?

Wang & Young (2007), Sazgar et al (2006)

Conclusions

- Support for binaural simultaneous recordings for VEMP screening measures, however:
- Monaural recordings may be more comfortable and reliable when asymmetry is suspected.
- Measurements above threshold may provide most reliable latencies for analysis.
- Support for a threshold search versus screening protocol.

References

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