VP 11 CHEAT SHEET

Vestibular Function Testing — Cheat Sheet for Physiotherapists

Reading vHIT, caloric, VEMP, rotation — to drive the rehab prescription.

► Why VFT literacy matters

A VFT report is a rehab map: vHIT gain, caloric CP, VEMP asymmetry, rotation phase — each pattern triggers a specific exercise lever. Reading the report well halves wasted exercise time.

When to request / read a VFT report

► When VFT changes the rehab plan

- ► Suspected unilateral hypofunction — confirm side, plane, end-organ before VOR x1/x2 dose.
- ► Suspected bilateral vestibulopathy — confirm before swapping adaptation for substitution.
- ► Atypical lateropulsion / head tilt — VEMP / SVV identify otolith involvement missed on canal tests.
- ► Persistent symptoms after a textbook program — VFT may reveal a missed deficit at a different frequency.

Three-vertex map — canal • otolith • central

Vertex	Tests	Numbers that matter
Canal	vHIT, caloric, rotational chair	vHIT gain less than 0.8; CP over 25%; rotation gain less than 0.5
Otolith	cVEMP, oVEMP, SVV	VEMP AR over 35%; SVV deviation over 2.5°
Central	Pursuit, saccades, HSN, fixation	Saccadic intrusions; abnormal pursuit gain; HSN over 5 beats

► Pearl: read by frequency

Caloric ≈ 0.003 Hz; rotation 0.01–0.64 Hz; vHIT 1–6 Hz. A normal vHIT with abnormal calorics is low-frequency loss; train at slower head speeds. The tests are complementary, not redundant.

vHIT — what to look for

Finding	Interpretation	Rehab change
Gain less than 0.8 with covert/overt saccades	Canal hypofunction confirmed	VOR x1/x2 in affected canal plane
Lateral + anterior canal loss only	Superior division neuritis	Standard VRT, expect 4–6 wk recovery
All canals affected	Full nerve / labyrinth lesion	Adaptation + substitution; longer course
Bilateral lateral loss	Bilateral vestibulopathy	Substitution-based VRT; falls review

Caloric and rotational chair — what to look for

Tool	Threshold	Interpretation
Caloric CP	over 25% (Jongkees)	Lateralised lateral-canal weakness
Caloric DP	over 25% no CP	Central or compensatory bias
Bilateral caloric weak	Total response under 25 °/sec	Bilateral vestibulopathy
Rotation gain less than 0.5	Across frequencies	Confirms bilateral hypofunction; serial monitoring

► Pearl: don’t skip the otolith arm

Missing the otolith arm is the commonest reason a textbook VRT plateaus. If lateropulsion or head-tilt persists with a "treated" canal lesion, ask for VEMP / SVV — add otolith balance work.

► Red flags on a VFT report

Bilateral absent VEMPs + abnormal rotation = bilateral vestibulopathy → fall risk. Asymmetric SNHL with vHIT loss → schwannoma until proven otherwise. Pure central signs (saccadic pursuit, gaze-evoked nystagmus) → neurology.

VP 11 CHEAT SHEET	**Vestibular Function Testing — Cheat Sheet for Physiotherapists** *Reading vHIT, caloric, VEMP, rotation — to drive the rehab prescription.*

VEMP — saccule and utricle

Test	Pathway	Abnormal threshold
cVEMP	Saccule → inferior vestibular n. → ipsilateral SCM	P13–N23 absent or AR over 35%
oVEMP	Utricle → superior vestibular n. → contralateral IO	n10–p15 absent or AR over 35%
SVV	Otolith / graviceptive pathway	Deviation over 2.5° from true vertical

► Pattern → rehab phenotype map

- ► Acute UVH superior division (vHIT lat+ant loss, CP, otoliths spared) → adaptation; 4–6 wk.
- ► Full UVH (all canals + VEMP asymmetric) → adaptation + otolith balance; longer course.
- ► Bilateral vestibulopathy (vHIT both, caloric weak, VEMPs absent) → substitution; gait aid.
- ► VM / PPPD (VFTs near-normal) → habituation, pacing, CBT — not adaptation.
- ► Compensated chronic UVH (vHIT abnormal, no symptoms) → maintenance only.

► When to refer onward

- ► New saccadic pursuit / gaze-evoked nystagmus → neurology / vestibular physician.
- ► Asymmetric SNHL or pulsatile tinnitus → urgent ENT / neuro-otology.
- ► Bilateral VEMP absence + bilateral vHIT loss → vestibular physician for diagnosis confirmation.
- ► Persistent SVV tilt over 5° not improving → vestibular physician review.

► Twelve-second tips

Read three numbers first: vHIT gain, caloric CP, VEMP asymmetry. Frequency-pair the tests (caloric low, rotation mid, vHIT high). Otolith arm is non-optional. Always cross-check audiometry.

► Common pitfalls — and how to avoid them

- ► Treating a normal vHIT as "no peripheral lesion" — calorics may still show low-frequency loss.
- ► Skipping VEMP — missing otolith asymmetry leads to plateau when canal training is otherwise correct.
- ► Reading bilateral vHIT loss as central — confirm with caloric and rotation before attributing to brainstem.
- ► Using rotation gain in isolation — phase lead and frequency-specific change matter as much as amplitude.
- ► Forgetting the audiogram — asymmetric SNHL with vestibular signs is a schwannoma flag.

► Special populations

- ► Children — vHIT and VEMP are well-tolerated; calorics often poorly tolerated.
- ► Older adults — bilateral age-related decline is common; interpret in context of falls history.
- ► Post-ototoxicity — bilateral pattern; expect substitution-based rehab plan from day one.
- ► Schwannoma post-op — caloric near-zero on operated side is expected; central compensation focus.

► Patient communication scripts

"Your vHIT showed reduced response on the right — that confirms the inner-ear injury we suspected and points us to specific exercises." | "Calorics test the slow signal; vHIT tests the fast — both matter for prescribing the right speed of training." | "VEMP checks a different part of the inner ear that helps with head-tilt sense — we will add a few targeted exercises."

► References / further reading

- ► Halmagyi GM, Curthoys IS. The video head impulse test. Front Neurol 2017;8:258.
- ► MacDougall HG et al. The vHIT — diagnostic accuracy. Neurology 2009;73:1134.
- ► Strupp M et al. Bilateral vestibulopathy diagnostic criteria. J Vestib Res 2017;27:177.
- ► Curthoys IS et al. Ocular VEMP — superior vestibular nerve origin. Clin Neurophysiol 2011;122:611.
- ► Hall CD et al. VRT clinical practice guideline. J Neurol Phys Ther 2022;46(2):118-177.