Vestibular Rehabilitation for Peripheral Vestibular Hypofunction: Adapted Egyptian Clinical Practice Guidelines (AECPG)

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Abbreviations

AECPG: Adapted Egyptian Clinical practice guideline.

APTA: American physical therapy association.

VRT: Vestibular rehabilitation therapy.

BSA: British society of audiology

BVH: Bilateral vestibular hypofunction.

CBT: Cognitive behavioral therapy.

GSE: Gaze stabilizing exercises.

IGE: international guidelines for education

VR: Visual reality

VOR: Vestibulo-ocular reflex.

UVH: Unilateral vestibular hypofunction.

Executive Summary

Audio-Vestibular medicine physicians prescribe the proper therapy plan that could be performed in collaboration with physiotherapist, Clinicians should offer vestibular rehabilitation to patients with acute or subacute UVH. **(Strong recommendation)**, In acute cases; patient might first take symptomatic treatment to control acute symptoms, anxiety and autonomic complaints to be able to start the VRT. Also Clinicians are **(strongly recommended)** to offer vestibular rehabilitation to patients with chronic UVH and BVH. Clinicians should not offer saccadic or smooth-pursuit exercises in isolation; as they are not specific exercises for gaze stability to individuals with unilateral or bilateral vestibular hypofunction **(strong recommendation)**. Clinicians may provide targeted exercise techniques to accomplish specific goals appropriate to address identified impairments, activity limitations, and participation restrictions **(strong recommendation)**. Clinicians may prescribe static and dynamic balance exercises and prescribe weekly clinic visits plus a home exercise program of gaze stabilization exercises **(strong recommendation)**. Clinicians should offer supervised vestibular physical therapy in individuals with peripheral UVH and BVH **(strong recommendation)**. Clinicians may use achievement of primary goals, resolution of symptoms, normalized balance and vestibular function, or plateau in progress as reasons for stopping therapy; objective and subjective outcome measures could be used, also Patient's age and physical capabilities should be considered. **(Strong recommendation)**. Clinicians may evaluate factors that could modify rehabilitation outcomes (strong recommendation). Clinicians should offer vestibular rehabilitation therapy to persons with peripheral vestibular hypofunction with the intention of improving quality of life **(Strong recommendation)**.

Introduction, scope and audience

Introduction

Vestibular rehabilitation therapy (VRT) is a specialized form of physical therapy used to treat vestibular disorders or symptoms characterized by dizziness, vertigo and trouble with balance, posture and vision.

Scope:

Providing evidence-based recommendations regarding appropriate VRT protocol to use in the treatment of individuals with acute, sub-acute, and chronic unilateral and bilateral peripheral vestibular hypofunction.

Target audience:

Audio vestibular medicine physician are those who prescribe the proper therapy plan, ENT for appropriate referral and physiotherapist could perform physiotherapy under supervision of audio vestibular medicine physician.

Methods

Methods of development

Stakeholder Involvement: Individuals who were involved in the development process. Included the above-mentioned Audio vestibular medicine Chief Manager, Audio vestibular medicine Executive Manager, Assembly Board, Grading Board and Reviewing Board.

Search method

Electronic database searched:
Pubmed, Medline, Medscape, WebMD, Google Scholar

Keywords:

Vestibular rehabilitation therapy, peripheral vestibular disorders, adults.

The adaptation cycle passed over: set-up phase, adaptation phase (Search and screen, assessment: currency, content, quality & /decision/selection) and finalization phase that included revision and external reviewing.

Time period searched: from 2009 t0 2022

Results

Three national Audio Vestibular Medicine consultants reviewed the guidelines available.
The American physical therapy association (APTA) guidelines gained the highest scores as regards currency, contents and quality and were thus adopted then adapted
It was graded by seventeen experts and reviewed by three expert reviewers to improve quality, gather feedback on draft recommendations.
The external review was done through a rating scale as well as open-ended questions.

Setting: Primary, secondary and tertiary care centers & hospitals, and related specialties.

Interpretation of strong and conditional recommendations for an intervention

Audience	Strong recommendation	Conditional recommendation
Patients	Most individuals in this situation would want the recommended course of action; only a small proportion would not. Formal decision aides are not likely to be needed to help individuals make decisions consistent with their values and preferences.	Most individuals in this situation would want the suggested course of action, but many would not
Clinicians	Most individuals should receive the intervention. Adherence to the recommendation could be used as a quality criterion or performance indicator.	Different choices will be appropriate for individual patients, who will require assistance in arriving at a management decision consistent with his or her values and preferences. Decision aides may be useful in helping individuals make decisions consistent with their values and preferences.
Policymakers	The recommendation can be adopted as policy in most situations.	Policy-making will require substantial debate and involvement of various stakeholders.

WHO handbook for guideline development – 2nd ed.Chapter 10, page 129

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach to Decision frameworks (GRADE Working Group 2013)

Grade	Definition
High	We are very confident that the true effect lies close to that of the estimate of the effect.
Moderate	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low	Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very Low	We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect

Recommendations,

The following statements and flowchart were adapted from the Guidelines from Vestibular Rehabilitation for Peripheral Vestibular hypofunction: An updated clinical practice guideline from the academy of neurologic physical therapy of the American physical therapy association (APTA) 2022. which received the highest scores as regards the currency, contents, and quality.

Recommendations statements

Accepted statements	
Modified statements	
Added statements	

Statement topic	Action recommendation	Evidence quality	Strength of recommendation after Adopt/adapt	Study type	Reference
***Who to perform?**	Audio-Vestibular medicine physicians prescribe the proper therapy plan that could be performed in collaboration with physiotherapist.	Very low	Strong	Expert opinion	1, 31, 35.
***Treatment approach**	In the acute stage following vestibular neuritis or labyrinthitis treatment may include medications, such as vestibular suppressants or antiemetics. Short-term, low-dose antihistamines might be used to relieve symptoms without adversely impacting recovery. Evidence does not support medication use for management of chronic vestibular hypofunction. A surgical or ablative approach is limited to individuals who have recurrent vertigo or fluctuating vestibular function and symptoms that cannot be controlled by other methods, such as lifestyle modifications or medication. The goal of the ablative approach is to convert a fluctuating deficit into a stable deficit to facilitate central vestibular compensation for UVH. **APTA VRT (2022)**	Very Low	Strong	Expert opinion	1,

***VRT procedure**	Customized training program is tailored to each patient according to needs and physical capabilities. APTA VRT (2022). The original vestibular exercises were developed by Cawthorne and Cooksey in the 1940s. They were designed to decrease symptoms of motion-provoked dizziness. They include a standardized series of exercises that involve a progression of eye movements only, head movements with eyes open or closed, bending over, sit-stand, tossing a ball, climbing ladders, and walking. The individual's position was progressed from lying down, to sitting, standing, and eventually walking. Current VRT includes a combination of 4 different exercise components to address the impairments, activity limitations, and participation restrictions identified during evaluation: (1) Gaze stabilization exercises, developed based on the concepts of VOR including adaptation and substitution. (2) Habituation exercises. (3) Balance and gait training. (4) Walking for endurance. Low technology and high technology approaches (e.g. visual reality) are included; stimuli can be graded in intensity through manipulation of stimulus parameters. Challenges are added regularly to upgrade the VRT exercises as the patient progresses throughout the training. Adding cognitive tasks during training makes the VRT more challenging and ensures better outcomes. Cognitive behavioral therapy (CBT): to let the patients challenge the negative thinking patterns, where patients learn to replace faulty thoughts with more functional ones.	Very Low	Strong	Expert opinion	1, 31,32

1-Effectiveness of vestibular rehabilitation in adults with acute and subacute unilateral vestibular hypofunction (UVH)	Clinicians should offer vestibular rehabilitation to patients with acute or subacute UVH. In acute cases; patient might first take symptomatic treatment to control acute symptoms, anxiety and autonomic complaints to be able to start the VRT.	High	Strong	Randomized controlled trials	2, 3, 4, 5, 31.
2-Effectiveness of vestibular rehabilitation in adults with chronic UVH	Clinicians should offer vestibular rehabilitation to patients with chronic UVH	High	Strong	Randomized controlled trials	6, 7, 8.
3-Effectiveness of vestibular rehabilitation in adults with bilateral vestibular hypofunction (BVH)	Clinicians should offer vestibular rehabilitation to patients with BVH	High	Strong	Randomized controlled trials	9, 10, 11, 12.

4-Effectiveness of saccadic or smooth-pursuit exercises in individuals with peripheral vestibular hypofunction (unilateral or bilateral)	Clinicians should not offer saccadic or smooth-pursuit exercises in isolation; as they are not specific exercises for gaze stability to individuals with unilateral or bilateral vestibular hypofunction	High	Strong	Randomized controlled trials	5, 13, 14, 31,32.
5-Comparative effectiveness of different vestibular rehabilitation modalities in individuals with vestibular hypofunction	Clinicians may provide targeted exercise techniques to accomplish specific goals appropriate to address identified impairments, activity limitations, and participation restrictions.	Low	Strong	High quality Cohort	16, 17, 18.

6a-Optimal balance exercise dose in the treatment of individuals with peripheral vestibular hypo function (unilateral and bilateral)	Clinicians may prescribe static and dynamic balance exercises: 1. For a minimum of 20 minutes daily for at least 4 to 6 weeks for individuals with chronic unilateral vestibular hypofunction. 2. For individuals with acute/subacute unilateral vestibular hypofunction; no specific dose recommendations (outcome based). 3. For 6 to 9 weeks for individuals with bilateral vestibular hypofunction (dynamic are more beneficial).	Low Low Low	Strong	High quality cohort	3, 19, 20.
6b-Optimal gaze stabilization exercise dosage of treatment in individuals with peripheral vestibular hypofunction (unilateral and bilateral)	Clinicians may prescribe weekly clinic visits plus a home exercise program of gaze stabilization exercises including at a minimum: 1. 3 times per day for a total of at least 12 minutes daily for individuals with acute/subacute UVH. 2. 3 to 5 times per day for a total of at least 20 minutes daily for 4 to 6 weeks for individuals with chronic UVH. 3. 3 to 5 times per day for a total of 20 to 40 minutes daily for approximately 5 to 7 weeks for individuals with BVH.	Low Low Low	Strong	Case control study	2, 6, 7.

7-Effectiveness of supervised vestibular rehabilitation	Clinicians should offer supervised vestibular physical therapy in individuals with peripheral UVH and BVH.	Strong	Strong	Randomized controlled trials	20, 21, 22.
8-Decision rules for stopping vestibular rehabilitation in individuals with peripheral UVH and BVH	Clinicians may use achievement of primary goals, resolution of symptoms, normalized balance and vestibular function, or plateau in progress as reasons for stopping therapy (objective and subjective outcome measures could be used). -Patient's age and physical capabilities should be considered.	Low	Strong	High quality Cohort	23, 24, 25, 33, 34.
9-Factors that modify rehabilitation outcomes	Clinicians may evaluate factors that could modify rehabilitation outcomes.	Low	Strong	High quality Cohort	2, 3, 26
10-The harm/ benefit ratio for vestibular rehabilitation in terms of quality of life.	Clinicians should offer vestibular rehabilitation therapy to persons with peripheral vestibular hypofunction with the intention of improving quality of life	Strong	Strong	Randomized controlled trials	27, 28, 29, 30.

Research needs

1-Researchers should explore delivery of VPT using technology, telehealth, or self-teaching methods as an alternative for some individuals and identify individual-level factors that impact the use of technology on rehabilitation outcomes and patient satisfaction.
2-There is a paucity of research on the effectiveness of vestibular rehabilitation in children. Randomized controlled studies are needed to determine the effect of GSE on gaze stability, gross motor abilities, and postural control in children with UVH and BVH.
3- Researchers need to investigate whether there is critical dosage or time points for person versus telehealth/remote supervision.
4-Researchers need to investigate added value of high technology methods (VR) to traditional methods of VRT.
5- Researchers should examine the concept of return to work. Areas for study include job requirements that may be difficult for individuals with vestibular hypofunction, job modification or assistive technology to allow return to work, criteria for return to work or disability assignment, and indicators for return to safe driving.

Monitoring and evaluating the impact of the guideline

Monitoring/ Auditing Criteria
Audio vestibular physician should be able to:

- Acquire patient full medical history.
- Differentiate between UVH and BVH.
- Differentiate between peripheral and central causes of imbalance
- Apply customized VRT.
- Counseling the patient and/or family member.
- Periodic assessment for VRT effectiveness.

Updating of the guideline

Updating Procedure:
Any recommendation of this guideline will be updated when new evidence that could potentially impact the current evidence base for this recommendation is identified. If no new reports or information are identified for a particular recommendation, the recommendation will be revalidated. The focus will be on recommendations supported by very-low- or low certainty evidence and where new recommendations or a change in the published recommendations may be needed.

References

1. Vestibular Rehabilitation for Peripheral Vestibular hypofunction: An updated clinical practice guideline from the academy of neurologic physical therapy of the American physical therapy association (APTA). Courtney D Hall et al. J. neurol. Phys. ther. 2022.

2. Lacour M, Laurent T, Alain T. Rehabilitation of dynamic visual acuity in patients with unilateral vestibular hypofunction: earlier is better. Eur Arch Otorhinolaryngol. 2020;277(1):103-113. doi:10.1007/s00405-019-05690-4.

3. Ismail EI, Morgan AE, Abdel Rahman AM. Corticosteroids versus vestibular rehabilitation in long-term outcomes in vestibular neuritis. J Vestib Res. 2018;28(5/6):417-424. doi:10.3233/VES-180645.

4. Tokle G, Mørkved S, Bråthen G, et al. Efficacy of vestibular rehabilitation following acute vestibular neuritis: a randomized controlled trial. Otol Neurotol. 2020;41(1):78-85. doi:10.1097/
MAO.0000000000002443.

5. Scheltinga A, Honegger F, Timmermans DP, Allum JH. The effect of age on improvements in vestibulo-ocular reflexes and balance control after acute unilateral peripheral vestibular loss. Front Neu-
rol. 2016;7:18. doi:10.3389/fneur.2016.00018.

6. Herdman SJ, Hall CD, Maloney B, Knight S, Ebert M, Lowe J. Variables associated with outcome in patients with bilateral vestibular hypofunction: preliminary study. J Vestib Res. 2015;25(3/4):185-194. doi:10.3233/VES-150556.

7. Lehnen N, Kellerer S, Knorr AG, et al. Head-movement-emphasized rehabilitation in bilateral vestibulopathy. Front Neurol. 2018;9:562. doi:10.3389/fneur.00562

8. Strupp M, Kim JS, Murofushi T, et al. Bilateral vestibulopathy: diagnostic criteria consensus document of the classification committee of the Bárány Society. J Vestib Res. 2017;27(4):177-189. doi:10.3233/VES-170619 .

9. Ricci NA, Aratani MC, Caovilla HH, Ganança FF. Effects of vestibular rehabilitation on balance control in older people with chronic dizziness: a randomized clinical trial. Am J Phys Med Rehabil. 2016;95(4):256-269.

10. Patarapak S, Jarusripan P, Isipradit P. Chulalongkorn vestibular balance exercise for rehabilitation in persons with various types of vestibular disorders. J Med Assoc Thai. 2015;98(suppl 1):S77-S84.

11. Itani M, Koaik Y, Sabri A. The value of close monitoring in vestibular rehabilitation therapy. J Laryngol Otol. 2017;131(3):227-231. doi:10.1017/S0022215116009750.

12. Szturm T, Reimer KM, Hochman J. Home-based computer gaming in vestibular rehabilitation of gaze and balance impairment. Games Health J. 2015;4(3):211-220. doi:10.1089/g4h.2014.0093

13. Herdman SJ, Schubert MC, Das VE, Tusa RJ. Recovery of dynamic visual acuity in unilateral vestibular hypofunction. ArchOtolaryngol Head Neck Surg. 2003;129(8):819-824. doi:10.1001/archotol.129.8.819.

14. Krebs DE, Gill-Body KM, Parker SW, Ramirez JV, Wernick Robinson M. Vestibular rehabilitation: useful but not universally so. Otolaryngol Head Neck Surg. 2003;128(2):240-250. doi:10.1067/mhn.2003.72.

15. Meldrum D, Herdman S, Vance R, et al. Effectiveness of conventional versus virtual reality-based balance exercises in vestibular rehabilitation for unilateral peripheral vestibular loss: results of a randomized controlled trial. Arch Phys Med Rehabil. 2015;96(7):1319-1328.e1. doi:10.1016/j.apmr.2015.02.032. 16. Jáuregui-Renaud K, Villanueva Padrón LA, Cruz Gómez NS. The effect of vestibular rehabilitation supplemented by training of the breathing rhythm or proprioception exercises, in patients with chron- ic peripheral vestibular disease. J Vestib Res. 2007;17(1):63-72.

16. Jáuregui-Renaud K, Villanueva Padrón LA, Cruz Gómez NS. The effect of vestibular rehabilitation supplemented by training of the breathing rhythm or proprioception exercises, in patients with chronic peripheral vestibular disease. J Vestib Res. 2007;17(1):63-72.

17. Brugnera C, Bittar RS, Greters ME, Basta D. Effects of vibrotactile vestibular substitution on vestibular rehabilitation—preliminary study. Braz J Otorhinolaryngol. 2015;81(6):616-621. doi:10.1016/j.bjorl.2015.08.013.

18. Marioni G, Fermo S, Zanon D, Broi N, Staffieri A. Early rehabilitation for unilateral peripheral vestibular disorders: a prospective, randomized investigation using computerized posturography. Eur Arch Otorhinolaryngol. 2013;270(2):425-435. doi:10.1007/s00405-012-1944-4.

19. Cakrt O, Chovanec M, Funda T, Kalitová P, Betka J, Zverina E, KolárP, Jerábek J. Exercise with visual feedback improves postural stability after vestibular schwannoma surgery. Eur Arch Otorhinolaryngol. 2010;267(9):1355-1360. doi:10.1007/s00405-010-1227-x.

20. Pavlou M, Bronstein AM, Davies RA. Randomized trial of supervised versus unsupervised optokinetic exercise in persons with peripheral vestibular disorders. Neurorehabil Neural Repair. 2013;27(3):208-218. doi:10.1177/1545968312461715.

21. Varriano B, Sulway S, Wetmore C, et al. Vestibular exercises as a fall prevention strategy in patients with cognitive impairment. Can J Neurol Sci. 2020;47(1):126-130. doi:10.1017/cjn.2019.309.

22. van Vugt VA, van der Wouden JC, Essery R, et al. Internet based vestibular rehabilitation with and without physiotherapy support for adults aged 50 and older with a chronic vestibular syndrome in general practice: three armed randomised controlled trial. BMJ. 2019;367:l5922. doi:10.1136/bmj.l5922.

23. Telian S, Shepard N, Smith-Wheelock M, Kemink J. Habituation therapy for chronic vestibular dysfunction: preliminary results. Otolaryngol Head Neck Surg. 1990;103(1):89-95. doi:10.1177/019459989010300113.

24. Shepard NT, Smith-Wheelock M, Telian SA, Raj A. Vestibular and balance rehabilitation therapy. Ann Otol Rhinol Laryngol. 1993;102(3, pt 1):198-205. doi:10.1177/000348949310200306.

25. Topuz O, Topuz B, Ardiç FN, Sarhus M, Ögmen G, Ardiç F. Efficacy of vestibular rehabilitation on chronic unilateral vestibular dysfunction. Clin Rehabil. 2004;18(1):76-83. doi:10.1191/0269215504cr704oa.

26. Horak FB, Jones-Rycewicz C, Black FO, Shumway-Cook A. Effects of vestibular rehabilitation on dizziness and imbalance. Oto-laryngol Head Neck Surg. 1992;106(2):175-180.

27. Enticott JC, O'Leary SJ, Briggs RJ. Effects of vestibulo-ocular reflex exercises on vestibular compensation after vestibular schwannoma surgery. Otol Neurotol. 2005;26(2):265-269. doi:10.1097/00129492-200503000-00024.

28. Rossi-Izquierdo M, Santos-Pérez S, Soto-Varela A. What is the most effective vestibular rehabilitation technique in patients with unilateral peripheral vestibular disorders? Eur Arch Otorhinolaryngol. 2011;268(11):1569-1574. doi:10.1007/s00405-011-1532-z.

29.Tee LH, Chee NWC, Zhu M, Jin J. Functional outcomes after customized vestibular rehabilitation in subjects with chronic vestibular dysfunction. Physiother Sing. 2010;13(2):4-7.

30. Bittar RSM, Pedalini MEB, Lorenzi MC, Formigoni LG. Treating vertigo with vestibular rehabilitation: results in 155 patients. Rev Laryngol Otol Rhinol. 2002;123(1):61-65.

31.Practice guidance Vestibular Rehabilitation British society of audiology (BSA). 2019.

32.International Guidelines for Education in Vestibular Rehabilitation Therapy (IGE/VRT). Journal of Vestibular Research October 2011.

33.Hall CD, Herdman SJ, Whitney SL, et al. Vestibular rehabilitation for peripheral vestibular hypofunction: an evidence-based clinical practice guideline: From the American Physical Therapy Association Neurology.

34.Institute of Medicine (US) Committee on Standards for Developing Trustworthy Clinical Practice Guidelines, Graham R, Mancher M, Miller Wolman D, et al. eds. Clinical practice guidelines we can trust. Washington, DC: National Academies Press (US). 2011. doi:10.17226/13058.

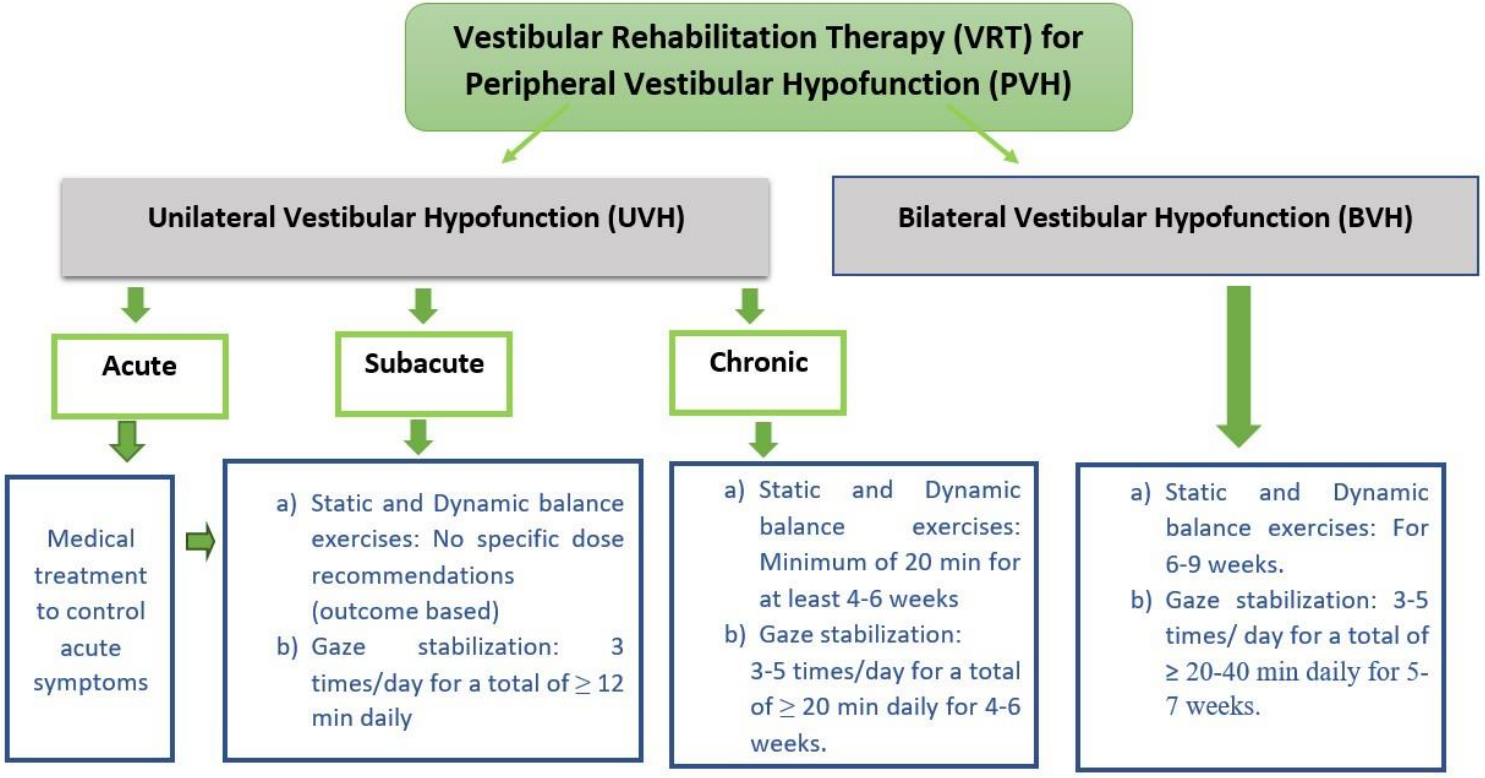
35. Phillips B, Ball C, Sackett D, et al. Oxford Centre for Evidencebased Medicine—Levels of Evidence. https:// www. cebm.net/ 2009/06/oxford-centre-evidence- based-medicine-levels-evidencemarch- 2009. apta. Published 2009.

Annexes

Editorial Independence:

- This guideline was developed without any external funding.
- All the guideline development group members have declared that they do not have any competing interests.

Annex 1: <u>Guideline Flowchart</u>



- A customized training program is tailored to each patient according to his/her identified impairments, needs, physical capabilities, activity limitations and participants restrictions.
- Clinicians may use achievement of primary goals, resolution of symptoms, normalized balance and vestibular function, or plateau in progress as reasons for stopping therapy (objective and subjective outcome measures could be used).
- Patient's age and physical capabilities should be considered.
- Clinicians may evaluate factors that could modify rehabilitation outcomes.

Annex 2: Tables of appraisal of selected guidelines: Content (table 1), Quality (table 2) and Currency (table 3) of the selected guidelines.

Assessment of Content

Criteria	Guideline 1 APTA 2022	Guideline 2 BSA 2019	Guideline3 IGE 2011
Creditability	8	8	7
Observability	8	8	7
Relevance	8	8	8
Relative advantage	8	8	8
Easy to install & understand	8	8	8
Compatibility	8	7	7
Testability	8	8	7
Total score	56	55	52

Assessment of Quality

Domain	Guideline APTA 2022	Guideline BSA 2019	Guideline IGE 2011
Transparency	A	B	A
Conflict of interest	NR	NR	NR
Development group	B	B	B
Systematic review	A	A	A
Grading of evidence	A	B	B
Recommendations	A	B	B
External review	A	A	A
Updating	A	A	B

Assessment of Currency of VRT for peripheral vestibular hypofunction

No	Guideline Name	Year of publication	Organization
1	APTA	2022	American physical therapy Association
2	BSA	2019	British society of audiology
3	IGE	2011	International guidelines for education

Annex 3: The risks and benefits of added and/or modified statements

Original & adapted summary of CPG recommendations of the selected guideline: Vestibular Rehabilitation for Peripheral Vestibular Hypofunction: Evidence-Based Clinical Practice Guideline. The American Physical Therapy Association (APTA) 2022.				
Title	**Original statement**	**Adapted statement**	**Reason of adaptation (Benefits)**	**Risks**
*Who to perform VRT	Physical therapist APTA 2022	Audio-Vestibular medicine physicians (AVM).	In Egypt, one of the job descriptions of AVM physicians is to diagnose, treat, and provide vestibular rehabilitation or recommend referral for patients with vestibular disorders. Patients will benefit from medical background of AVM physicians in diagnosis, treatment and at the same time putting the plan of rehabilitation strategy.	
1.Effectiveness of vestibular rehabilitation in adults with acute and subacute unilateral vestibular hypo function.	Clinicians should offer vestibular rehabilitation to patients with acute or subacute unilateral vestibular hypofunction.	Clinicians should offer vestibular rehabilitation to patients with acute or subacute UVH. In acute cases; patient could first take symptomatic treatment to control acute symptoms, anxiety and autonomic complaints to be able to start the VRT.	symptomatic treatment helps the patient to endure the exercises	Continuation of medical treatment behind recommended period may hinder central vestibular compensation
4.Effectiveness of saccadic or smooth-pursuit exercises in individuals with peripheral vestibular hypofunction (unilateral or bilateral)	Clinicians should not offer saccadic or smooth-pursuit exercises as specific exercises for gaze stability to individuals with unilateral or bilateral vestibular hypofunction	Clinicians should not offer saccadic or smooth-pursuit exercises in isolation; as they are not specific exercises for gaze stability for individuals with unilateral or bilateral vestibular hypofunction	Information content is the same, but in adapted form is clearer. That we might use saccadic or smooth-pursuit exercise but never to depend on it alone as it is not specific in UVH/BVH	
8. Decision rules for stopping vestibular rehabilitation in individuals with peripheral vestibular hypofunction (unilateral and bilateral)	Clinicians may use achievement of primary goals, resolution of symptoms, normalized balance and vestibular function, or plateau in progress as reasons for stopping therapy	Clinicians may use achievement of primary goals, resolution of symptoms, normalized balance and vestibular function, or plateau in progress as reasons for stopping therapy (Objective and subjective outcome measures could be used).	Assure individual variability in setting the management therapy protocol.	

		-Patient’s age and physical capabilities should be considered.		