



Benign Paroxysmal Positional Vertigo (BPPV): TRV Chair and Torsion Clinical References

2019 - 2025

TRV Chair

1. **Precise head positioning with the TRV Chair + VORTEQ sensor leads to greater diagnostic accuracy in lateral canal BPPV than traditional maneuvers**
 - a. Hentze M, Hougaard DD and Kingma H (2025) Impact of head orientation and head movement in traditional manual diagnostics of benign paroxysmal positional vertigo: a randomized controlled crossover study. *Front. Neurol.* 16:1654404. doi: 10.3389/fneur.2025.1654404
2. **The TRV Chair demonstrates significantly greater diagnostics sensitivity for BPPV than traditional manual maneuvers.**
 - a. Hentze M, Hougaard DD and Kingma H (2024) Is diagnostics of Benign Paroxysmal Positional Vertigo with a mechanical rotation chair superior to traditional manual diagnostics? A randomized controlled crossover study. *Front. Neurol.* 15:1519837. doi: 10.3389/fneur.2024.1519837
3. **Performing posterior canal repositioning maneuvers using the TRV Chair reduces the severity of residual dizziness in the first 3 days compared to traditional manual maneuvers.**
 - a. Soylemez E, Bolat KB, Karakoc K, et al. The Effect of Repositioning Maneuver Applied with the TRV Chair on Residual Dizziness after Benign Paroxysmal Positional Vertigo. *Otol Neurotol.* 2023;44(8):e596-e601. doi:10.1097/MAO.0000000000003978
4. **The use of the TRV Chair for BPPV diagnosis should be used in cases with non-posterior canal BPPV, persistent BPPV or low patient cooperation in manual maneuvers.**
 - a. Bech MW, Staffe AT, Hougaard DD. A mechanical rotation chair provides superior diagnostics of benign paroxysmal positional vertigo. *Front Neurol.* 2023;14:1040701. Published 2023 Jan 27. doi:10.3389/fneur.2023.1040701
5. **When using the TRV Chair, performing two to three canalith repositioning maneuvers (CRM) is recommended, as this approach provides greater benefit, including reduced residual dizziness and vomiting, compared with a single CRM.**
 - a. Zhang H, Zhu M. Mechanical rotational chair-assisted multiple canalith repositioning procedures for benign paroxysmal positional vertigo: enhanced vertigo relief, comparable adverse effects, and decreased incidence of residual dizziness. *Front Neurol.* 2023;14:1226138. Published 2023 Aug 7. doi:10.3389/fneur.2023.1226138



6. **The average number of treatments using the TRV Chair was 2.7, with a 94% success rate across 635 patients with various canal involvement.**
 - a. Hougaard DD, Valsted SH, Bruun NH, Bech MW, Talebnasab MH. Seven years of experience with treatment of benign paroxysmal positional vertigo with a mechanical rotational chair. *Front Neurol.* 2022;13:981216. Published 2022 Aug 25. doi:10.3389/fneur.2022.981216

7. **The TRV Chair demonstrated high effectiveness in both the diagnosis and treatment of retractable and atypical BPPV, with a success rate of 92.4% and an average of 2.23 treatment sessions.**
 - a. Pedersen MF, Eriksen HH, Kjaersgaard JB, Abrahamsen ER, Hougaard DD. Treatment of Benign Paroxysmal Positional Vertigo with the TRV Reposition Chair. *J Int Adv Otol.* 2020;16(2):176-182. doi:10.5152/iao.2020.6320

8. **The TRV Chair successfully treated 31 patients with refractory BPPV in a mean of 2 treatments. Patients also demonstrated significant decrease on the Dizziness Handicap Index (DHI) and Hospital Anxiety and Depression Scale (HADS).**
 - a. West N, Bloch SL, Moller MN, Hansen S, Klokke M. Reposition Chair Treatment Improves Subjective Outcomes in Refractory Benign Paroxysmal Positional Vertigo. *J Int Adv Otol.* 2019;15(1):146-150. doi:10.5152/iao.2019.5659

VisualEyes™ Torsional Algorithm

1. **Shows variability in torsional nystagmus parameters and emphasizes standardizing torsional measurements for diagnosis.**
 - a. Barin K, Petrak MR, Cassidy AR, Whitney SL. Quantified assessment of 3D nystagmus in BPPV: practical considerations. *Frontiers in Neurology.* 2025;16:1549407. doi:10.3389/fneur.2025.1549407

Additional references for importance of measuring torsion for complex BPPV

1. **Overview of positional nystagmus including torsional patterns**
 - a. Argaet, E. C., Bradshaw, A. P., & Welgampola, M. S. (2019). Benign positional vertigo, its diagnosis, treatment and mimics. *Clinical neurophysiology practice*, 4, 97–111. doi.org/10.1016/j.cnp.2019.03.001

2. **Clinical features of posterior canal BPPV torsional components.**
 - a. Hizal, E., Jafarov, S., Erbek, S. H., & Ozluoglu, L. N. (2022). Clinical Interpretation of Positional Nystagmus Provoked by both Dix-Hallpike and Supine Head-Roll Tests. *The journal of international advanced otology*, 18(4), 334–339. <https://doi.org/10.5152/iao.2022.21461>



3. The 3D (including torsional) patterns in BPPV

- a. Liu, Y., Zhang, X., Deng, Q., Liu, Q., Wen, C., Wang, W., & Chen, T. (2022). The 3D characteristics of nystagmus in posterior semicircular canal benign paroxysmal positional vertigo. *Frontiers in neuroscience*, 16, 988733. <https://doi.org/10.3389/fnins.2022.988733>

4. Differential diagnosis of anterior versus apogeotropic posterior canal BPPV

- a. Garaycochea, O., Pérez-Fernández, N., & Manrique-Huarte, R. (2022). A novel maneuver for diagnosis and treatment of torsional-vertical down beating positioning nystagmus: anterior canal and apogeotropic posterior canal BPPV. *Brazilian journal of otorhinolaryngology*, 88(5), 708–716. <https://doi.org/10.1016/j.bjorl.2020.09.009>