

# Physiotherapy Briefings for Physicians

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## Vestibular Rehabilitation

**This issue focuses on research on the use of vestibular rehabilitation to reduce symptoms of peripheral vestibular dysfunction such as dizziness, gaze disturbances and balance impairment.**

### **Physiotherapists design and monitor therapeutic exercise programs proven to reduce symptoms associated with vestibular dysfunction.**



The symptoms of vestibular dysfunction result in poor quality of life and loss of productivity. In the US, dizziness complaints result in nearly seven million doctor visits a year [1]. The lifetime incidence of dizziness is about eight percent; it is the most common symptom in elderly patients [2].

A recent Cochrane review [1] of 21 studies summarized research to March 2007 on the effectiveness of vestibular rehabilitation. Based on the number of high-quality randomized controlled trials, the authors found strong to moderate evidence that vestibular rehabilitation is safe and effective for management of unilateral peripheral vestibular dysfunction. For the specific diagnosis of benign paroxysmal positional vertigo (BPPV), physical repositioning maneuvers (such as the canalith repositioning maneuver) are more effective than vestibular rehabilitation alone. However, a more recent study [3] found strong evidence ( $p < 0.05$ ) that vestibular rehabilitation exercises further improved balance and functional gait performance among patients with BPPV who had already undergone the canalith repositioning maneuver.

Another study evaluated vestibular rehabilitation exercises in the early stages of peripheral vestibular disorders [4]. The experimental group ( $n = 45$ ) was assigned exercises for the adaptation of the vestibulo-ocular reflex. The control group ( $n = 42$ ) was assigned placebo exercises. Both groups were prescribed up to 150 mg/d dimenhydrinate if symptomatic. At 10 to 14 days, the test group showed a significant decrease in symptoms ( $p < 0.001$ ), and in the use of medication ( $p < 0.001$ ). At the end of 21 days, the test group was using less medication than the control group ( $p < 0.001$ ). The authors concluded that vestibular rehabilitation is effective in reducing the duration of symptoms and the need for medication in the early stages of peripheral vestibular disorders.

Although vestibular rehabilitation was developed to treat vestibular disorders, it has also been used to treat other causes of dizziness. A 2007 systematic review synthesized the literature to determine the strength of evidence for using vestibular rehabilitation for a wider variety of disorders causing dizziness, including: vestibular hypofunction, after vestibular surgery, multisensory dizziness, Meniere's disease, neurological causes of dizziness, BPPV, phobic postural vertigo (PPV), dizziness associated with whiplash-associated disorders (WAD) and migraine-associated dizziness [2]. From the 71 studies reviewed, the authors found:

There is strong evidence that patients with peripheral vestibular dysfunction can achieve significant improvement in symptoms by following well-designed vestibular rehabilitation programs such as those designed and monitored by physiotherapists.

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- A recent study examined the use of sustained natural apophyseal glides (SNAG)<sup>1</sup> in the treatment of cervicogenic dizziness [7]. The test group had less dizziness ( $p < 0.05$ ), lower dizziness handicap inventory scores ( $p < 0.05$ ) and less cervical pain ( $p < 0.05$ ) than the placebo group at post treatment and six-week follow-up.
- A 2007 study examined the effect of vestibular rehabilitation exercises on the recovery of visual acuity during head movement in patients with bilateral vestibular hypofunction (BVH) [5]. The measured outcomes were dynamic visual acuity using a computerized test and intensity of oscillopsia using a visual analog scale. Although the number of patients in the study was small (test  $n = 8$ , control  $n = 5$ ), the test group showed significant improvement ( $p = 0.001$ ).
- Cervicogenic dizziness, caused by dysfunction of upper cervical vertebral segments, may benefit from manual therapy such as manipulation, mobilization, massage, and other manual treatments, as concluded in a review of nine studies [6].

<sup>1</sup> SNAG: a sustained passive accessory glide in the plane of the zygapophyseal joint performed by the therapist while patients move their neck in the symptomatic direction.

## Physiotherapists design and monitor therapeutic exercise programs proven to reduce symptoms associated with vestibular dysfunction...continued from front page

- Strong evidence for vestibular rehabilitation for vestibular hypofunction, for multisensory dizziness and for Meniere's disease
- Moderately strong evidence for vestibular rehabilitation after vestibular surgery
- Although there is as yet insufficient evidence for vestibular rehabilitation for neurological dizziness, BPPV, PPV, WAD-associated dizziness and migraine-associated dizziness, current results are promising enough that vestibular rehabilitation may be recommended for these diagnoses after further studies.

### Vestibular rehabilitation physiotherapist-prescribed program example:

- **Warm up phase (10 minutes)**
- **Circuit training (2 minutes for each exercise and two laps in the circuit):**
  - Walk forward and backwards on a slope while turning the head from side to side.
  - Stand up and sit down on a chair while turning the head from side to side.
  - Stand on a trampoline, eyes closed and slightly flex knees and turn head from side to side simultaneously.
  - Stand on foam with eyes closed and turn head from side to side.
  - Stand on a sport mat, walk on the spot and turn head from side to side.
  - Sit on a ball, feet on foam, eyes closed. Bounce slightly while turning head from side to side.
  - Walk forward and backward while turning head from side to side.
- **Recovery phase (5 minutes)**

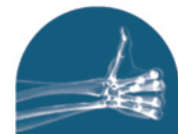
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### Fast Facts

Vestibular rehabilitation aims to maximize central nervous system compensation for vestibular pathology. Its components are [1]:

- **Compensatory responses (for positional or motion-provoked symptoms)** – use motion to habituate or reduce responsiveness to repetitive stimuli and to rebalance tonic activity within the vestibular nuclei.
- **Adaptation (for visual-vestibular interaction/gaze stabilization and possibly eye/hand coordination)** – uses repetitive and provocative movements of the head and/or eyes to reduce error and restore vestibulo-ocular reflex gain.
- **Substitution** – promotes the use of individual or combinations of sensory inputs (sensory, somatosensory) to bias use away from dysfunctional vestibular input or to strengthen use and drive compensation.
- **Postural control exercises, fall prevention, relaxation training, (re)conditioning activities and functional/occupational retraining** – change movement behaviour and/or promote movement fitness.



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Tel 604.736.5130 Toll free 1.888.330.3999  
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