

Physical Therapy approach of the Benign Paroxysmal Positional Vertigo

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ABSTRACT

This paper examines the evidence-based physical therapy approaches for managing Benign Paroxysmal Positional Vertigo (BPPV), characterized by brief episodes of vertigo induced by head movements. The etiology of BPPV, including idiopathic causes and conditions like post-traumatic vestibular neuritis, is discussed. Key diagnostic and therapeutic techniques, such as the Dix-Hallpike maneuver and Canalith Repositioning Treatment (CRT), are analyzed. The efficacy of Brandt-Daroff exercises for habituation therapy is evaluated. Additionally, the paper highlights various vestibular rehabilitation exercises aimed at improving balance, postural stability, and vestibulo-ocular reflex, including Cawthorne and Cooksey exercises, the Otago exercise program, and Tai Chi Chuan. These findings underscore the importance of tailored physical therapy in effectively managing BPPV.

BPPV is characterized by brief episodes of vertigo, with the perception of either the environment or one's self spinning when the head is moved into certain positions. Patients with BPPV commonly report vertigo triggered by lying down, rolling over in bed, bending over, and looking up. The distinct characteristic of benign paroxysmal positional vertigo is the appearance of nystagmus provoked by positional changes against gravity. The etiology of BPPV is usually idiopathic, Post-traumatic, Vestibular neuritis, and vertebrobasilar insufficiency. The proposed causative

mechanism of the BPPV is debris called otoconia adherent to the cupula of the semicircular canal, which significantly increases the density of the cupula resulting in vertigo, nystagmus, and nausea.

The common maneuver for diagnosis of BPPV is **the Dix Hall pike maneuver** in which the patient rotates head 45° and goes to straight back position in supine lying with 30° extension of neck over the edge. If symptoms of vertigo, nystagmus, or nausea appear, the test is positive. (Fig 1)



Fig 1 Dix Hall pike maneuver

Vertigo at positional changes can be disturbing for the patient for performing any activity of daily living. In the rehabilitation of BPPV, we use different maneuvers and vestibular exercises as treatment. The most commonly practiced maneuver is **Canalith Repositioning Treatment (CRT)** in which patient is in long sitting position with head turned 45° to the affected side and patient goes straight back in supine position with 30° neck extension and keep it until nystagmus disappears then with

assistance of the therapist, patient rotates the moderately extended neck to the unaffected side and keeps new position until nystagmus disappears. The patient is then rolled to the unaffected side with head 45° down and position is maintained until nystagmus disappears then keeping the head deviated patient sit up and slowly turn the head back in neutral position. Patient experiences short spells of vertigo during each position. (Fig 2) [1]

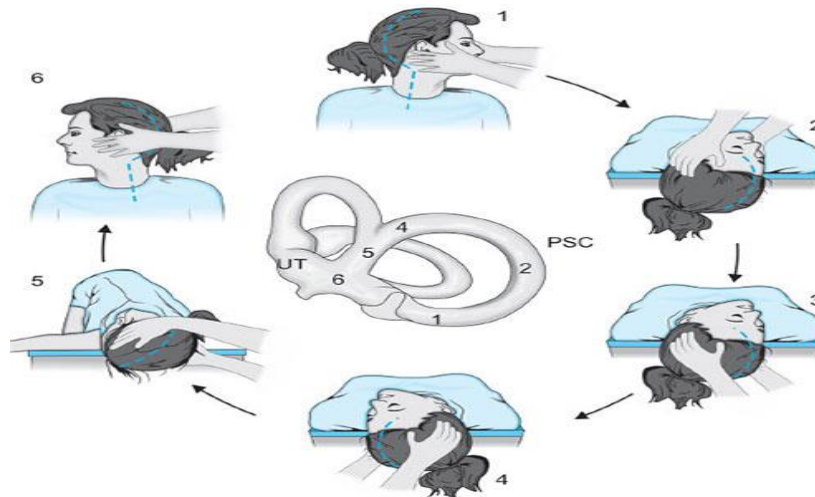


Fig 2 Canalith Repositioning treatment

There is significant evidence on the efficacy of **Brandt-Daroff exercises** which is a habituation exercise. The treatment consisted of repeated movements into and out of provoking head positions on a serial basis. The patient is in a sitting position and quickly to a side-lying position on the affected side for 30 seconds

after vertigo has stopped. The patient then sits up and waits for vertigo to stop. The patient then repeats the movement to the opposite side, stays there for 30 sec after vertigo stops, and sits up. The entire treatment is repeated 10 to 20 times, three times a day, until the patient has no vertigo for 2 days in a row. (Fig 3)

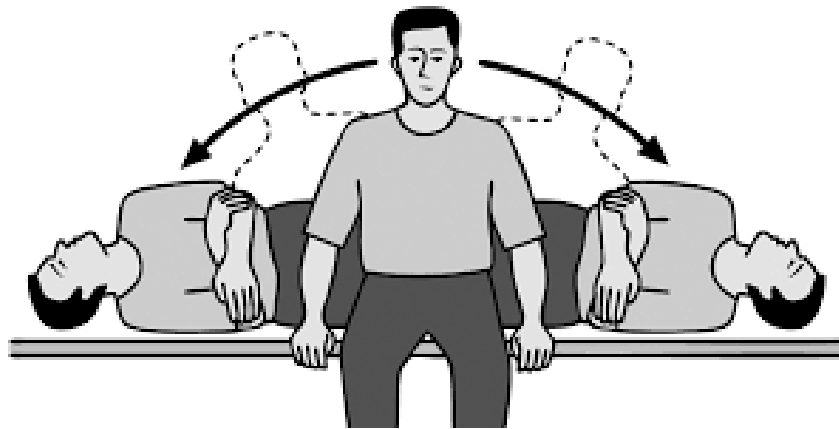


Fig 3 Brandt Daroff exercises

The vestibular exercises help improve balance, postural stability, vestibule-ocular reflex, head and eye coordination in patients with vestibular and non-vestibular disorders. Following are the exercise programs incorporated in the **Vestibular Rehabilitation Therapy**. These are:

- ✚ **Cawthorne and Cooksey's exercises** include visual (eye-tracking exercises), exercise to improve vestibule-ocular reflex, and exercises of joints of the body to regain proprioceptive apprehension.

These exercises are:

- I. Movement of eyes up and down, side to side and in and out.
- II. Movement of the neck with fixating gaze at a subject.
- III. Bending forward and picking up objects.
- IV. Sit to stand with open and then closed eyes.
- V. Shoulder shrugs and shoulder circling
- VI. Upper trunk rotation side to side.
- VII. Throwing ball right to the left hand
- VIII. Juggling ball with hands in between knees
- IX. Climbing upstairs
- X. Standing and turning around
- XI. Standing on one foot with eyes open and then eyes closed
- XII. Stand on a foam surface
- XIII. Walk around with closed eyes.

✚ **Otago exercise program** works on balance, muscle strength (with external resistance), general fitness, and general well-being.

✚ **Tai-chi Chuan exercise program** is Chinese conditioning exercises incorporating breathing with slow graceful movements to improve balance.

The vestibular exercise programs should be taught to patients carefully so they can perform them at home as their care plan. The performance should be monitored by a senior physical therapist and a progressive increase in intensity is ensured on subsequent sessions.

References

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