

Table 4 - uploaded by Patrick O Riley

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Phase 1

- | | |
|--|---|
| 1. Promote use of VOR and COR for gaze stability | Visual fixation, EO, stationary target, slow head movements |
| 2. Promote use of saccadic eye movements for gaze stability | Active eye and head movements between stationary targets, sitting |
| 3. Improve ability to utilize somatosensory and vestibular inputs for postural control | Static stance, EO and EC, feet together, arms outstretched |
| 4. Improve ability to utilize vestibular and visual inputs for postural control | Static stance on foam surface, EO, arms outstretched |
| 5. Improve dynamic postural control utilizing all sensory inputs | Gait with narrowed base of support, EO |
| 6. Improve dynamic postural control utilizing all sensory inputs | March in place, EO |

Phase 2

- | | |
|---|--|
| 1. Promote use of VOR and COR for gaze stability at various speeds of head movement | Visual fixation, EO, stationary target, fast head movements |
| 2. Encourage vestibular adaptation by inducing retinal slip | Visual fixation, EO, moving target, slow head movements |
| 3. Promote use of saccadic eye movements for gaze stability | Active eye-head movements between stationary targets in sitting and standing, fast and slow speeds, EO |
| 4. Encourage resetting of VOR gain | Imaginary visual fixation, EC, small head movements, self-selected speeds |
| 5. Improve ability to utilize somatosensory and vestibular inputs for postural control | Static stance, semitandem, EO and EC, arms close to body |
| 6. Improve ability to utilize vestibular inputs for postural | Static stance on foam support, EO and EC, arms close to body control |
| 7. Improve dynamic postural control utilizing vestibular inputs | Gait with narrowed base of support, EO |
| 8. Improve dynamic postural control with head moving utilizing all sensory inputs | Gait with normal base of support, slow head movements, EO |
| 9. Improve dynamic postural control utilizing all sensory inputs | Gait with wide turns to right and left, EO |
| 10. Improve ability to utilize somatosensory inputs during ankle strategy postural movements and lateral body movements | Balance board practice, EO |

Phase 3

- | | |
|--|--|
| 1. Encourage vestibular adaptation by inducing retinal error at various head speeds | Visual fixation on a moving target, fast head movements, EO |
| 2. Promote use of VOR and COR for gaze stability | Active eye-head movements between stationary targets in standing, EO |
| 3. Encourage resetting of VOR gain at various head speeds | Imaginary visual fixation, EC, small head movements, fast speed |
| 4. Improve ability to utilize somatosensory and vestibular inputs for postural control | Static stance, semitandem, EO and EC, arms across chest |
| 5. Improve ability to utilize vestibular inputs for postural control | Static stance on foam support, EO and EC, arms across chest |
| 6. Improve dynamic postural control with head moving utilizing all sensory inputs | Gait with normal base of support, fast head movements, EO |
| 7. Improve dynamic postural control utilizing all sensory inputs | Gait with sharp turns to right and left, EO |

*EO=eyes open; EC=eyes closed; VOR=vestibular ocular reflex; COR=cervical ocular reflex.
 Vestibular Rehabilitation Treatment Program and Its Rationale for Patient With
 Bilateral Vestibular Hypofunction Rationale Treatment Activity



Physical Therapy Management of Peripheral Vestibular Dysfunction: Two Clinical Case Reports

Article

Full-text available

Mar 1994

Kathleen M Gill-Body · David E Krebs · Stephen W Parker · Patrick O Riley

We describe the treatment of two patients with peripheral vestibular dysfunction using a novel, staged exercise program. Response to treatment was documented. The first patient, a 62-year-old woman with unilateral vestibular dysfunction (UVD) and a 6-month history of disequilibrium following herpes zoster oticus resulting in damage to the right inn...

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Contexts in source publication

Context 1

... combined vestibular adaptation/ substitution treatment program that the patient received during the first 8 weeks consisted of exercises and activities outlined under phases 1 through 3 in Table 4 . The patient performed phase 1 of the program during weeks 1 through 3, phase 2 during weeks 4 through 6, and phase 3 during weeks 7 and 8. ...

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Context 2

... patient progressed to each new phase as her performance on the previous phase improved, as noted by her ability to perform the exercises easily and without an increase in the perception of dizziness or disequilibrium. The rationale for each activity included in the treatment program is briefly listed in Table 4 and is based on the work of Herdman.³ The patient noted daily which exercises she performed at home and any particular difficulties she experienced utilizing the standard patient compliance record. ...

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Citations

... (Vestibular Rehabilitation Therapy) was developed and approved by rehabilitation professionals including occupational therapy and audiology faculty members according to the

vestibular sensory stimuli, which stimulate the semicircular channels, utricle, and saccule organs [32] [33] [34][35][36]. This protocol includes vestibular exercises for central and peripheral vestibular structures. ...

... This protocol includes vestibular exercises for central and peripheral vestibular structures used for experiment group [32,34,35]. These training exercises include overall balance exercises such as jumping on trampolines, lying and sitting on the therapy ball, maintaining balance standing, sitting, squatting, etc. on a tilt board, taking different positions like standing, kneeling and crawling on rotating boards or scooters, walking on the balance beam, linear and rotational movements back and forth, left and right on a normal swing, passing over the obstacle, rolling, simple and difficult moves backward [34], stability exercises like standing on one leg with eyes open and closed [32], standing with feet in tandem, moving back and forth, staring and standing while changing legs width, exercise with head lights, head spin, rotating the headtrunk, turning heads while walking, practicing on the ramp, going up and down stairs, saccadic eye movements using eye gaze stability, simultaneous vestibular and somatosensory inputs [33],



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Jan 2018

 Hojjat Haghighoo

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... A higher gait speed was also found during a clinical functional test performed on a computerized gait assessment system in patients with bilateral cPVH [38,39]. An 8% increase in gait speed after rehabilitation is documented in patients with vestibulopathy [40, 41]. Other authors concluded with increased walking speed strategy patients are better able to suppress misleading vestibular signals [42][43][44][45]. ...

Patients with chronic peripheral vestibular hypofunction compared to healthy subjects exhibit differences in gaze and gait

Article Full-text available

Dec 2017 · PLOS ONE

 Jaap Swaneburg ·  Edith Bähler ·  Rolf Adelsberger · 
Dominik Straumann ·  Eling D. de Bruin

Objective The aim of this study was to compare gaze behaviour during stair and ramp walking between patients with chronic peripheral vestibular hypofunction and healthy human subjects. **Methods** Twenty

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... Together with visual and somatosensory inputs, the neural control of gait heavily relies on vestibular information (Bent, Inglis, and McFadyen, 2004). As a result, gait may become a challenging task for patients with vestibular vertigo (Gill-Body, Krebs, Parker, and Riley, 1994) both in the acute and in the chronic stage of the disease. The incidence of falls of patients with chronic bilateral vestibulopathy (BVP) is significantly greater than in patients with chronic unilateral vestibulopathy (Gill-Body, Krebs, Parker, and Riley, 1994; Herdman, Blatt, Schubert, and Tusa, 2000). ...

... As a result, gait may become a challenging task for patients with vestibular vertigo (Gill-Body, Krebs, Parker, and Riley, 1994) both in the acute and in the chronic stage of the disease. The incidence of falls of patients with chronic bilateral vestibulopathy (BVP) is significantly greater than in patients with chronic unilateral vestibulopathy (Gill-Body, Krebs, Parker, and Riley, 1994; Herdman, Blatt, Schubert, and Tusa, 2000). ...

... Faster locomotion can be achieved solely by spinal cord mechanisms (e.g., highly automated central pattern generators in the spinal cord) (Brandt, Strupp, and Benson, 1999; Mori et al., 1998) mainly driven by cerebellar pacemakers (Brandt, Strupp, and Benson, 1999; Mori et al., 1998). After rehabilitation, BVP patients reported less dizziness, decreased double limb support during walking, and increased gait speed (Gill-Body, Krebs, Parker, and Riley, 1994). Krebs et al. (2003) documented an 8% increase in gait speed after rehabilitation in BVP patients. ...

A pilot study investigating the association between chronic bilateral vestibulopathy and components of a clinical functional

[Article](#)

Jun 2017 · Physiother Theor Pract

● Jaap Swanenburg · Aron Zurbrugg · ● Dominik Straumann · ● Stefan C. A. Hegemann · ● Eling D. de Bruin

Background: This study aimed to analyze the association between prospectively assessed falls and functional abilities in patients with bilateral vestibulopathy (BVP). Methods: Nineteen BVP patients had

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... Please see Chapter 18 for specifics about the repositioning maneuvers. Benign paroxysmal positional vertigo (Epley, 1992;Bhattacharyya et al., 2008;Helminski et al., 2010) Vestibular neuronitis (Shepard et al., 1990;Horak et al., 1992;Tokumasu et al., 1993; Gillbody et al., 1994; Telian and Shepard, 1996;Cowand et al., 1998;Bamiou et al., 2000;Black et al., 2000;Hahn et al., 2001;Corna et al., 2003;Pavlou et al., 2004b;Dominguez, 2005;Perez et al., 2006;Halmagyi et al., 2010) Labyrinthitis (Shepard et al., 1990;Horak et al., 1992;Vitte et al., 1994;Yardley et al., 1998;Bamiou et al., 2000;Hahn et al., 2001;Strupp et al., 2001;Corna et al., 2003;Cohen and Kimball, 2004;Topuz et al., 2004;Swartz and Longwell, 2005;Clendaniel, 2010;Kao et al., 2010;Mohammad et al., 2010) Vestibular schwannoma (Herdman et al., 1995;El-Kashlan et al., 1998;Badke et al., 2002;Enticott et al., 2005;Magnusson et al., 2009) Menière's disease (Clendaniel and Tucci, 1997;Dowdal-Osborn, 2002;Gottshall et al., 2005bGottshall et al., , 2010Magnusson et al., 2009) Bilateral vestibular loss (Krebs et al., 1993;Herdman, 1997;Gillespie and Minor, 1999;Brown et al., 2001; Menière's disease ...

An overview of vestibular rehabilitation

Chapter

Dec 2016

● S.L. Whitney · ● A.A. Alghwiri · A. Alghadir

Data related to the efficacy of vestibular rehabilitation and its evolution as an intervention are provided. Concepts and various treatment strategies are described, with explanations of why people with

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... • Ask the child to look at different targets with high eye speed with eyes fixed for 30 seconds (this exercise will facilitate gaze stabilization using saccadic eye movements) [38]
... • Ask the child to stand with open eyes while he/she is opening his/her arms in front for 20 seconds. Now ask him/her to do it with eyes closed (simultaneous use of vestibular and somatosensory inputs) [38]
... • Now ask him/her to repeat the above exercise on a foam with eyes opened and closed for 20 seconds (Simultaneous use of vestibular and visual inputs) [38]

Review Paper: Introduction of Pediatric Balance Therapy in Children with Vestibular Dysfunction: Review of Indications,

Article

Apr 2016

Iranian Rehabilitation Journal

The vestibular system is important for the development of normal movement reactions, motion tolerance, and motor control for postural alignment, balance, and vision. A vestibular system that is damaged by

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Review Paper: Introduction of Pediatric Balance Therapy in Children with Vestibular Dysfunction: Review of Indications,

Article [Full-text available](#)

Mar 2016

● Younes Lotfi · ● Nima Rezazadeh · ● Abdollah Moossavi · ● Ha. Haghighi · ● Yousef Khodabandelou

The vestibular system is important for the development of normal movement reactions, motion tolerance, and motor control for postural alignment, balance, and vision. A vestibular system that is damaged by

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Review Paper: Introduction of Pediatric Balance Therapy in Children with Vestibular Dysfunction: Review of Indications,

Article [Full-text available](#)

Mar 2016

● Irj -Uswr

The vestibular system is important for the development of normal movement reactions, motion tolerance, and motor control for postural alignment, balance, and vision. A vestibular system that is damaged by

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... 6 -8 Restricted movements, muscle tension, fatigue, and pain, particularly in the cervicothoracic region, have been described in people with a primary complaint of dizziness. 7,8 Other investigators have reported pulling sensations in the cervical and upper trapezius muscles 9 as well as pain and stiffness in the upper trunk and leg muscles, 10 which can be present chronically, during attacks of dizziness, or both. In a study of 503 patients with dizziness, 11 the percentage of patients reporting neck pain increased from 27% at the initial visit to 59% 5 years later. ...

Examination and Treatment of Patients With Unilateral Vestibular Damage, With Focus on the Musculoskeletal System: A Case

[Article](#)

Feb 2014 · PHYS THER

● Kjersti Wilhelmsen · ● Alice Kvåle

Background and purpose: Persistent dizziness and balance problems have been reported in some patients with unilateral vestibular pathology. The purpose of this case series was to address the

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... ve subjects interventional withoutsuf ficient or thesis article of BVH analysis for BVH access not established Asai et al. 1997 X Barros et al. 2010 X Borello-France et al. 1996 X Brown et al. 2001 X Chiari et al. 2005 X Cowand et al. 1998 X Creath et al. 2002 X Danilov et al. 2007 X Gill-Body et al. 1994 X Haran et al. 2008 X Hegeman et al. 2005 X Heimbrand et al. 1996 X Herdman et al. 2001b X Jauregui-Renaud et al. 2007 X Kentala et al. 2003 X Lekhel et al. 1997 X McGibbon et al. 2004 X McGibbon et al. 2005 X Meli et al. 2007 X O'Neill et al. 1998 X Polat and Uneri 2010 X Pavlou et al. 2004 X Ricci et al. 2010 X Riley 2010 X Robinson et al. 2009 X Sasaki & Taguchi 1994 X Scherer et al. 2008 X Sienko et al. 2008 X Uneri and Polat 2009 X Southard et al. 2004 X X Telian et al. 1991 X Vichare et al. 2009 X Viirre and Sitarz 2002 X Wall III 2010 X Wall and Kentala 2005 X Wall and Kentala 2010 X Zingler et al. 2008 X ...

The effect of vestibular rehabilitation on adults with bilateral vestibular hypofunction: A systematic review

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Dec 2012 · J VESTIBUL RES-EQUIL

● Franchino Porciuncula · ● Connie C Johnson · ● Leslie B Glickman

Purpose: Adults with bilateral vestibular hypofunction (BVH) experience significant disability. A systematic review assessed evidence for vestibular rehabilitation (VR). Number of studies: 14

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... Severity of dizziness (an average level over the previous week) will be measured with a 100 mm horizontal visual analogue scale (VAS). The VAS has been used successfully to measure dizziness in other studies [4, 37 3839. ...

... 1) Frequency of dizziness will be measured on a sixpoint rating scale (0 = no dizziness, 1 = dizziness less than once per month, 2 = 1–4 episodes of dizziness per month, 3 = 1–4 episodes of dizziness per week, 4 = dizziness once daily, 5 = dizziness more than once a day or constant). This scoring method has been used by several researchers [4,8, 37, 38] to measure frequency of dizziness. ...

... Posturography has been used in many studies to assess people with dizziness and has been found to have good correlations with the participant's symptoms [4,6,8, 37] . 6) A Cervical Range of Motion (CROM) goniometer (Performance Attainment Associates, 3550 Lahore Rd, St Paul, MN), which has been shown to be a reliable tool with good validity [50], will be used to measure cervical spine movements. ...

Efficacy of manual therapy treatments for people with cervicogenic dizziness and pain: Protocol of a randomised

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[Full-text available](#)

Oct 2012 · BMC MUSCULOSKEL DIS

● Susan A Reid · ● Darren A Rivett · ● Michael G Katekar · ● Robin Callister

Background Cervicogenic dizziness is a disabling condition characterised by postural unsteadiness that is aggravated by cervical spine movements and associated with a painful and/or stiff neck. Two

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