



Vestibular Rehabilitation SIG

Spring 2007

In this issue:

| | |
|------------------------------|---|
| Message from the Chair | 1 |
| OPK Round Table Summary | 2 |
| A Message from the Secretary | 3 |

Vestibular SIG Officers:

Chair:

Denise Gobert, PT, PhD
d.gobert@alumni.utexas.net

Vice Chair:

Diane Wrisley, PT, PhD, NCS
dwrisley@buffalo.edu

Secretary:

Michelle Gutierrez, PT
mlgutierrez@zianet.com

Nominating Committee:

Danielle Nightshade, PT
nelle0417@hotmail.com

Elizabeth Grace, PT, NCS

Elizabeth.grace@uphs.upenn.edu

Pat Winkler P.T. D.Sc., NCS

pwinkler@regis.edu

Newsletter Editor:

Sharan Zirges, PT, CWS
sharan.zirges@gentiva.com

Message from the Chair

**By Denise Gobert, PT, PhD
VR SIG Chair**

The Vestibular Rehabilitation (VR) SIG officers are happy to provide you with another information-packed spring edition of our newsletter.

The following articles will be presented as a follow-up to the American Physical Therapy Association (APTA) Combined Sections Meeting (CSM) 2007, with highlights to review this year's meeting in Boston.

As our SIG membership moves into gear for 2007, I am excited about a couple of encouraging CSM high points.

First of all, our membership should be well resourced in order to answer the question - Who is the practitioner of choice to provide Vestibular Rehabilitation to patients with vestibular-related dizziness and balance disorders?

And, what makes physical therapists unique in their practice of Vestibular Rehabilitation?

With the enabling support of APTA Neurology Section President Kathy Sullivan, a special task group was formed during CSM 2007 to address this issue in the form of an APTA Reference Committee motion to be presented to the House of Delegates in May 2007.

The task force group included:

- Sue Perry, Neurology Section VP

- Sue Whitney
- Joan Bohmert, APTA Board Liaison for the Neurology Section
- Kathy Brown, Liaison to the House of Delegates
- Denise Gobert, VR SIG Chair

Preliminary indications are that the motion is also going to be supported by the APTA Executive Board.

We will of course keep you informed about these proceedings because we feel this effort may encourage further developments on behalf of the physical therapist specializing in VR.

Second of all, CSM 2007 was the 30th Anniversary for the Neurology Section in the APTA.

I highly recommend that you look at the interesting message by Dr. Kathy Sullivan in the December 2006 issue of the Journal of Neurologic Physical Therapy.

It is quite apparent that physical therapy practice has grown over the years.

For example, Vestibular Rehabilitation has made several advances in both clinical practice and research as indicated by this issue's article highlighting innovative research presented at our business meeting by Dr. Wrisley.

CSM 2007 was marked many exciting group activities, therefore enjoy the following articles, which are geared toward keeping you informed of vestibular-related topics and issues in support of VR practice. ♦

OPK Round Table Summary

By Pat Winkler P.T. D.Sc., NCS

The discussion of indications for and use of optokinetic stimulation (OPK) for patients with visual vertigo (space and motion sensitivity) was the topic of the round table presented by the vestibular SIG.

The lively discussion included signs and symptoms of visual vertigo (VV), indicators for intervention, intervention techniques and procedures.

Participants ranged from those with extensive experience with patients with VV, to those seeing only a few a months.

The patient population:

The discussion centered on individuals with VV who also had vestibular dysfunctions.

Bronstein[1] described subjects with VV as experiencing dizziness and/or imbalance when the environment around them is in motion, such as walking in crowded malls, at church, when there are very busy patterns such as stripes in the environment, or walking down tree-lined streets, and during driving especially if it is raining or snowing.

These individuals have higher levels of dizziness[3] measured by the Dizziness Handicap Inventory[4] than individuals with vestibular problems who do not have VV.

Sway on force platform studies [3] is worse when the visual background is moving than with either eyes open or eyes closed for individuals with VV in contrast to individuals with vestibular dysfunction who have worse sway with their eyes closed.

Other signs included dizziness with eye movements during visual testing, especially smooth pursuit.

A paper and pencil test for VV was developed by Bronstein and is being modified by Susan Whitney to identify individuals with VV.

Pat Winkler had also developed a test using Bronstein's observations as well as those of clinicians seeing patients with VV [11].

Intervention:

Optokinetic stimulation has proven an effective

intervention for individuals with VV[5, 7]. Our clinic uses the Starball II. This "disco ball" projects well-delineated white lights images that fill the entire visual field.

Placed about 9 feet from the facing wall, the speed of movement on the wall falls in a range for good stimulation of balance responses (1Hz or a little faster).

Patients stand facing the wall and have an object for fixation in front of them (in the research project I used a red diode light on a pole about 21 inches from the bridge of the nose).

Wyatt and Pola[8, 9] have demonstrated that visual fixation inhibits perception of background movement and optokinetic nystagmus (OKN). Kenda Fuller, who has extensive experience treating these patients, uses a tennis-sized ball hanging from the ceiling by a nylon filament which allows a progression of exercises to include smooth pursuit during the stimulation.

Duration of intervention is 10 minutes per session. Session frequencies varied from 3 times a week in my study to 5 times a week for Kenda.

Clinical experience suggests that a six-week intervention is effective, although patients showed significant improvements in 3 weeks at 3 times a week in my studies.

Patients all have increased dizziness and sway during treatment and many fall so support and guarding is necessary. An increased symptom level may last several days to a week.

Patients progress through a series of activities while experiencing the OPK treatment, including narrowing the base of support, one leg standing, walking and working on the balance master (Kenda).

Fixation is also progressed to a moving target and then to no target. Many patients report that the fixation object (whether the light or the ball) appears to move.

This sensation resolves as the patient proceeds through treatment. The discussion moved to topics of Mal de Barquement with Kenda Fuller reporting that many of these patients also did well with the OPK stimulation.

We also discussed ways to differentiate patients

with vestibular migraine from patients with other types of vestibular disorders as several member of the group found that treatment irritated patients with vestibular migraine. Susan Whitney recommended using a pencil and paper evaluation published by Marcus [10].

The discussion wrapped up with speculation about the basis for improvement in VV from OPK. Currently theory suggests that subjects with VV are visually dependent and OPK, by providing inaccurate input to the visual system forces the system to switch to an alternative source of sensory information.

I believe that the fixation point helps in suppression of the background motion based on studies by Wyatt and Pola.[8, 9] Neurons in the occipital lobe in monkey show inhibition of visual motion seen behind the point (plane) where a person is focusing[6, 2].

These "disparity neurons" depend on a tightly coordinated visual system. Some neurons in the vestibular nuclei also appear to help suppress motion, particularly during eye motion.

[1] A. M. Bronstein, The visual vertigo syndrome, *Acta Oto-Laryngologica - Supplement*, 520 Pt 1 (1995), pp. 45-8.

[2] C. Busetini, Masson, G., Miles, F., A role for stereoscopic depth cues in the rapid visual tabilization of the eyes, *Nature*, 380 (1996), pp. 342-345.

[3] M. Guerraz, L. Yardley, P. Bertholon, L. Pollak, P. Rudge, M. A. Gresty and A. M. Bronstein, Visual vertigo: symptom assessment, spatial orientation and postural control, *Brain*, 124 (2001), pp. 1646-56.

[4] G. P. Jacobson and C. W. Newman, The development of the Dizziness Handicap

Inventory, *Archives of Otolaryngology -- Head & Neck Surgery*, 116 (1990), pp. 424-7.

[5] M. Pavlou, A. Lingeswaran, R. A. Davies, M. A. Gresty and A. M. Bronstein, Simulator based rehabilitation in refractory dizziness, *Journal of Neurology*, 251 (2004), pp. 983-95.

[6] G. F. Poggio, F. Gonzalez and F. Krause, Stereoscopic mechanisms in monkey visual cortex: binocular correlation and disparity selectivity, *Journal of Neuroscience*, 8 (1988), pp. 4531-50.

[7] P. Winkler, Aaker, JA, Cozine-Lehman, JK., Overy, RJ., Ruettggers, JA., Visual stimulation as an intervention for dizziness and disequilibrium in individuals with visual motion sensitivity, *American Physical Therapy Association National Conference*, poster presentation, Chicago, ILL, 2003.

[8] H. Wyatt, Pola, J., Lustgarten, M., Aksionoff, E., Optokinetic nystagmus (OKN) suppression by fixation of a stabilized target: the effect of OKN-stimulus predictability, *Vision Research*, 35 (1995), pp. 2903-2910.

[9] P. J. Wyatt HJ, A mechanism for suppression of optokinesis, *Vision Research*, 24 (1984), pp. 1931-1945.

[10] Marcus D., Kapelewski C, Rudy T., Jacob R., Furman J. Diagnosis of migrainous vertigo: validity of a structured interview. *Med. Sci. Monit.* 2004;10:CR107-201.

[11] Winkler P., Koch A, Limoges A., Perez D., Schrey Peter, Smith J. The influence of visual stimulation and somatosensory exercises on visual motion hypersensitivity. Poster session presented at the Annual American Physical Therapy Association meeting, Chicago, IL June 2004. ♦

A Message from the Secretary

By Michelle Gutierrez, PT

Visit our Web site, <http://www.neuropt.org/sigs/vestib/SIG-vestibular2.cfm>, for links to past newsletters, upcoming events, and resources. The SIG maintains a database on the site of members interested in treating patients with vestibular dysfunction. If you'd like to add your name to the list, you must be a Neurology Section member. If eligible, please contact Michelle Gutierrez at michelle@icsnm.com. Include your contact information and an e-mail that you want to be made public. If you think you may already be listed, please check the list for accuracy.