
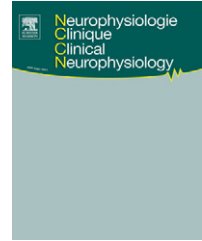




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REVIEW/MISE AU POINT

Vestibular rehabilitation therapy

Rééducation vestibulaire

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MOTS CLÉS

Désordres vestibulaires ;
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Summary Dizziness and balance disorders are frequent complaints in the general population. Vestibular rehabilitation exercises have been shown to be efficient in controlled studies, provided that a precise, individual diagnosis has previously been made. Depending on the pathology, a subject with a peripheral vestibular pathology can benefit from manoeuvres aiming at dislodging or repositioning otoliths, from non-specific muscles strengthening techniques, from techniques for vestibular-ocular or vestibular-cervical stabilisation of gaze, or from physical exercises aimed at strengthening proprioceptive afferents, inhibiting a sensory predominance, or improving spatial orientation and navigation. These analytical exercises should then be implemented in an ecological context in order to favour transfer to daily-living activities. These physical exercises can enable the development of compensation strategies following vestibular damage (habituation, adaptation and substitution).

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Résumé Les vertiges et les troubles d'équilibre sont des plaintes fréquentes en population générale. Les exercices de rééducation vestibulaire sont des techniques reconnues très efficaces comparées à des groupes témoins sous réserve d'avoir fait un diagnostic précis et individualisé. Un sujet avec une pathologie vestibulaire périphérique peut, selon le cadre nosologique retenu, bénéficier de manoeuvres libératoires ou de repositionnement des otolithes, de techniques de rééducation de renforcement musculaire non spécifiques, de techniques de rééducation de stabilisation du regard vestibulo-oculaire ou vestibulo-cervical, d'exercices physiques cherchant à forcer les afférences proprioceptives ou inhiber une prédominance sensorielle, à travailler la

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navigation et l'orientation spatiale. Ces exercices analytiques devront ensuite être travaillés de manière écologique pour un transfert dans les activités de la vie journalière. Ces exercices physiques favorisent les phénomènes de compensation suite à une lésion vestibulaire (habituation, adaptation et substitution).

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Introduction

Techniques used in vestibular rehabilitation therapy are based on both precise, individual diagnosis of lesions and follow-up of condition progress. Specific methods include manoeuvres aiming at dislodging or repositioning otoliths, habituation, adaptation or substitution exercises that can be vestibular-ocular, vestibular-cervical, or vestibular-spinal, spatial-orientation and navigation exercises, and "ecological" functional stability exercises for balance and walking applied to specific tasks or environmental settings. Non-specific methods consist generally in rehabilitating overall endurance, and strengthening specific muscle groups so as to sustain posture or balance. The first empirical vestibular rehabilitation programs were developed for subjects presenting with brain injuries, and later on, the hypothesis of canalithiasis in the semi-circular canals was validated by the success of dislodging manoeuvres.

Animal and human research in both healthy and pathological subjects has provided a basis for vestibular rehabilitation:

- vestibular rehabilitation therapy is classically indicated for a stable, non-compensated vestibular lesion;
- the choice of exercises is guided by both patient symptoms and related physiopathological mechanisms: various dislodging manoeuvres (depending on the affected canal) for benign paroxysmal postural vertigo (BPPV), stability exercises (vestibular-ocular or vestibular-spinal, and/or integration of balance);
- exercise duration is short (1–2 min) and exercise intensity is defined according to symptoms;
- habituation and substitution exercises are repetitive (8–10 repetitions for exercises to stabilize gaze);
- sensory-perceptive-motor adaptation exercises require use of selective attention;
- vestibular rehabilitation therapy should be implemented with variable frequencies and using numerous different tasks for successful ecological transfer of obtained results.

Anamnesis and clinical evaluation

Anamnesis should identify these symptoms that hamper daily living, their chronology, and duration since disorder onset. Clinical examination aims at establishing a precise diagnosis and assessing each patient so as to define an

individualised therapeutic strategy. In this area, a multi-disciplinary approach and access to certain measurement tools is useful: video-nystagmoscopy or nystagmography, rotating chair, optokinetic generators, stabilometric platform.

Anamnesis

Anamnesis should focus on these disturbances that are related to orientation or balance and on the adjustment strategies used by the patient to stabilise himself. The following information should be obtained: onset of the first balance-related symptom (vertigo, instability, unsteadiness), given that the illusion of gyration can be difficult to distinguish from certain associated clinical disorders such as vegetative symptoms; duration since onset; onset circumstances; recurrence; date and place of first symptom; history of ear trauma or ear surgery; and links between movements and bouts of dizziness. During the interview, it is essential to get an estimation of the duration of the first symptoms in seconds, minutes or hours, and to know position that produced a reduction in symptoms. Orthostatic hypotension or genuine loss of consciousness should lead the practitioner to question the implication of the inner-ear captors. Anamnesis of associated symptoms is very important: hearing disorders, autonomic disorders as opposed to vertigo, signs of neurological deficit, simultaneous presence of headache, photophobia or cervical pain.

Clinical examination

Many functional activities require immediate balance and posture control. Balance requires the implication of miscellaneous sensory, motor and attentional resources, which are integrated into a sensory-perceptive-motor closed-loop model [25] that is orchestrated and controlled by the CNS. The modelling or cerebral integration of balance and spatial perception underlies static or dynamic postural stability. The labyrinth contains only one type of sensory captor used for balance. Clinical examination makes it possible to differentiate these signs relating to a labyrinth disorder from those relating to an extra-labyrinth problem (Tables 1 and 2). Indeed, extra-labyrinth deficits should be taken into account in designing an individualised rehabilitation programme or specific complementary vestibular examinations.

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