Effectiveness of combined Vestibular Rehabilitation & Cognitive Behavioral Therapy in the treatment of Chronic Dizziness: A Systematic Review

Authors: Rhonda Cooper, Erica Haker, Bryan Cervantes, April Pemble, Shaila Jiwa

Supervisor: Dr. Janice Eng
Outline

- Introduction
- Methods
- Results & Discussion
- Physiology
- Limitations & Future Research
- Summary
INTRODUCTION
Vestibular Rehabilitation
Figure 2A: Look straight ahead.

Figure 2B: Turn your head 45 degrees towards the right.

Figure 2C: Turn your head 45 degrees towards the left.

Note: Business card should be positioned at eye level.

(c) T.C. Hain, 2002
Cognitive Behavioral Therapy
Canalith Repositioning Maneuvers
Chronic Dizziness

- 1/3 of older adults report experiencing dizziness and/or loss of equilibrium
- 1/5 working age adults experience dizziness
- 1/10 working age adults report experiencing dizziness as a handicap
- The prevalence of dizziness may be underestimated as many people living in community have handicapping chronic dizziness that is neither diagnosed or treated
Chronic Dizziness

- Dizziness contributes to increased incidence of falls due to increased fear of falling precipitating falls

- Dizziness leads to decreased social involvement and subsequent increased anxiety and risk of depression

- Dizziness contributes to musculo-skeletal problems such as neck stiffness and headache
Anxiety & Dizziness

- Anxiety and Dizziness are co-morbid conditions in a larger percentage of the population than would be expected from chance.

- Many patients with anxiety disorders present with abnormal vestibular function.

- Many patients with vestibular disorder suffer from anxiety.
Vestibular Rehabilitation & Cognitive Behavioral Therapy
METHODS
Literature Search: Electronic Databases

- CINHAL
- Cochrane Central Register of Controlled Trials
- Cochrane Database of Systematic Reviews
- EBM Reviews – ACP Journal Club
- EMBASE
- Google Scholar
- PEDro
- PsycInfo
- PubMed
- Web of Science
- PapersFirst
- Proquest Dissertations and Theses
Literature Search: Key Words

- Vestibular rehabilitation
  Exercise
  Exercise therapy
  Kinesiotherapy

- Cognitive behavioral therapy
  Cognitive therapy
  Behavioral therapy
  Psychotherapy

- Dizziness
  Vestibular disease
  Vestibular disorder
  Balance disorder
  Vertigo
Literature Search: Limits

- English
- Up to June 2006
- No limits imposed on the type of study
- Review papers excluded
Literature Search: PubMed

- Large number of search results (783)
- Clinical queries filter
  - Limits results to randomized controlled trials (RCTs)
- Relevant articles link
  - Does not limit studies based on study design
Literature Search: Other Strategies

- Web of Science
  - Author search feature:
    - Yardley
    - Andersson
    - Johansson
    - Holmberg

- Reference lists search
Literature Search: Hand Searching

- All relevant journals were searched thoroughly using electronic databases
- Not implemented
Inclusion Criteria

- **Population:**
  - Adults over 19 years of age with chronic dizziness

- **Intervention:**
  - VR combined with CBT

- **Outcome:**
  - Relevant measures for dizziness, anxiety and depression were considered
  - i.e. Dizziness handicap inventory (DHI) and vertigo symptom scale (VSS)
Quality Assessment

- Modified version of Downs & Black Checklist for Measuring Study Quality
  - Applicable to both randomized and non-randomized studies
- 2 independent reviewers
- Disagreement resolution:
  - Consensus achieved by discussion among the 2 reviewers
  - 3rd reviewer available for mediation
Data Extraction

- Modified version of the Cochrane Back Review Group data extraction form
- 2 independent reviewers
- Disagreement resolution:
  - Consensus achieved by discussion among the 2 reviewers
  - 3rd reviewer available for mediation
RESULTS & DISCUSSION
Study Selection

- Electronic data bases & examination of reference lists produced 320 studies
- 6 were selected for abstract or text screening
- 5 remaining underwent quality assessment & data extraction
- 4 were selected for this systematic review
A controlled trial of CBT combined with VR in the treatment of dizziness

Andersson et al. 2006

- n = 29
- VR & CBT vs. Wait-list control
- Significant treatment effects were found on self-reported handicap, behavioural measures of exposure to dizziness-provoking movements, & daily registrations of dizziness & distress associated with unsteadiness.
- No significant change from pre- to post-treatment was found in regards to self-reported measures of general distress.
Randomized controlled trial of VR combined with CBT for dizziness

Johansson et al. 2001

- n = 19
- VR & CBT vs. Wait-list control
- Statistically significant improvements in the treatment group on walking time, 2 dizziness provocative movements, & on the DHI.
- No significance found on the Romberg, several of the dizziness provocative movements, or on the questionnaires measuring anxiety & depression.
Feasibility & effectiveness of providing VR for dizzy patients in the community

Yardley et al. 1998

- n = 16
- Pre-VR & CBT vs. Post-VR & CBT
- Improvements were found in the ability to undertake physical activities such as walking & climbing stairs, & how much dizziness interferes with different activities.
- There is some evidence to show that there is a decrease in postural sway.
Treatment of phobic postural vertigo: A controlled study of CBT & self-controlled desensitization

Holmberg et al. 2006

- n = 31
- VR & CBT vs. VR alone
- Significant, but small, improvement in experienced vertigo severity & handicap in the self-treatment group.
- Significant additional effects of psychological treatment showed improvements in patients’ experienced handicap, anxiety, & depression.
- Results suggest that the treatment effects obtained were less strong overall.
Findings

- Combination of VR & CBT was found to be an effective intervention for patients with chronic dizziness in the majority of the outcomes measured by the 4 studies.

- However, we were unable to conclude that combined VR & CBT is more effective than either VR & CBT alone.
PHYSIOLOGY
Physiological links between balance and anxiety

- Physiological connection between balance disorders and anxiety.

- 4 vestibular nuclei located in the brainstem
  → input from the vestibular portion of C.N. VIII

- Parabrachial nucleus located in the brainstem
The parabrachial nucleus network

- emotional, affective, and physiological manifestations of fear and anxiety

- convergence of vestibular, somatic, and visceral information processing

Fig. 1. Global diagram of the relationship between central vestibular pathways, central visceral pathways, and the ‘parabrachial nucleus network’ (shaded). See text for detailed discussion.
Physiological links between balance and anxiety

- There is a direct link between the vestibular system and neural networks involved in expressing anxiety and emotions.
LIMITATIONS
Limitations

- Limited number of studies
- Limited quality of research examining VR and CBT
- Factors that contributed to the low quality scores are:
  - Lack of randomization
  - Small sample size
  - Lack of control group
  - Lack of blinding
Limitations

- Only one of the studies compared combined VR & CBT to VR alone
- Variability in the research:
  - patient populations
  - interventions
  - outcome measures
- Variability in the studies made it difficult to consolidate results and draw valid conclusions
FUTURE RESEARCH
Future Research

- Research that compares combined VR & CBT to VR alone is needed
  - to help determine if combined use of VR & CBT is more effective than either intervention alone
Future Research

- Study design needs to be improved:
  - larger sample sizes
  - randomization
  - control groups
  - homogeneity of patient population
  - standardized interventions
  - consistent outcome measures
Future Research

- Need to consider the cost-effectiveness of combining CBT with VR
- CBT is an individualized one on one treatment
  - need to investigate if CBT administered in groups could be as effective in reducing symptoms and be more cost-effective than individual treatment
SUMMARY
Although combined VR & CBT was found to be an effective intervention for patients with chronic dizziness, we cannot conclude that it is a more effective intervention than either VR or CBT alone.

- Shortage of research in the area of VR and CBT
- Lack of standardization for both therapeutic methods.
Summary

- Face validity exists for the use of VR & CBT

- Stronger evidence needed before valid clinical recommendations can be made
References

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References

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Questions?

Questions are guaranteed in life; Answers aren't.