Spinning as a Form of Vestibular Rehabilitation
Emily Halliwell\textsuperscript{a}, Debbie Cane\textsuperscript{b}, Solomon Pudj\textsuperscript{c}
\textsuperscript{a}\textsuperscript{Lancashire Teaching Hospitals NHS Foundation Trust,} \textsuperscript{b}\textsuperscript{Manchester Centre for Audiology and Deafness (ManCAD), University of Manchester,} \textsuperscript{c}\textsuperscript{Tameside and Glossop Integrated Care NHS Foundation Trust}

**Vestibular Rehabilitation**

**Current Approaches**
Current evidence-based practice in vestibular rehabilitation (VR) uses an exercise-package approach tailored to individuals' symptoms. It is designed to promote central compensation and functional improvement in balance through mechanisms of adaptation, habituation, and substitution.

**Areas for Exploration**
Exercise training techniques used in other sectors may be of benefit for patients with vestibular deficits and the wider population. Emerging treatments include perturbation training, gaze-stabilization exercises using incremental increases in gain and virtual reality. Anecdotal evidence exists that high velocity spinning exercises used in elite ice-skaters' training may be beneficial beyond the sports world. Could spinning translate to an effective form of VR?

**Motorised Rotating Platform Training**

**Rotating Platform with Harness System: 'Spinner'**
A rotating platform with supporting harness is used in elite ice skaters' training, based in America. The motorised platform can be rotated at variable speeds and the pulley system can be used to lift the user to spin in the air with inertia. There is reported benefit to the wider public for reducing dizziness and improving balance.

**Currently Used Protocol**
- Rotated 5 spins anticlockwise, 5 spins clockwise, 5 spins anticlockwise. Rest between rotations as desired. Speed dependent on individual
- Speed of 17 rotations per minute in non-athletes, gradually increasing speed over time according to user’s preference
- Speed of 100 rotations per minute in elite athletes who have been training on the spinner 3-7 times per week over 2 years
- Performed twice per week for 6 weeks. Anecdotally reported sustained effects from 6-8 weeks

**Case History**
Reported typical case of a 78 year old suffering falls shows improved posturography, reported reduction in falls and subjective improvement in balance.

\textbf{Pre-treatment (away area =7.14 in²)} \hspace{1cm} \textbf{Post-treatment (away area = 0.18 in²)}

**Areas for Exploration**
Robust investigation in normals and patients with dizziness could explore the true effects of the spinner for use in VR.

**Conclusions and Ideas for Research**
There is emerging evidence\textsuperscript{1,2} in normals that rotational training may: - Reduce VOR time constants and perception time constants - Uncouple the perception and VOR reflexes
There is limited evidence on the effects of rotational training in people with vestibular deficits but it is postulated that a similar reflex uncoupling and decrease in perception time constant (and thus symptoms of dizziness) could occur.

\begin{itemize}
  \item Suggestion:
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    \item Normative data collection (VOR time constants, perception time constants and balance) pre- and post- rotation training with a robust spinning protocol and validated questionnaires.
    \item Similar data collection in patients with vestibular migraine (known increased time constants).
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**References**
\textsuperscript{1}Clement G, Tilikete C, Courjon JH. Retention of habituation of vestibulo-ocular reflex and sensation of rotation in humans. Exp Brain Res. 2008 Sep;190(3):307-15

With thanks for supporting information on training techniques and permission for images to Sheila Thelan, Vestibular Training Services. Contact: Sheila@SpinTheBrain.com
Contacts: Emily Halliwell, MSc CS, Clinical Scientist, Audiology; Emily.Halliwell@lthtr.nhs.uk; Debbie Cane MSc CS, Senior Clinical Scientist and Audiology Lecturer; Debbie.Cane@Manchester.ac.uk