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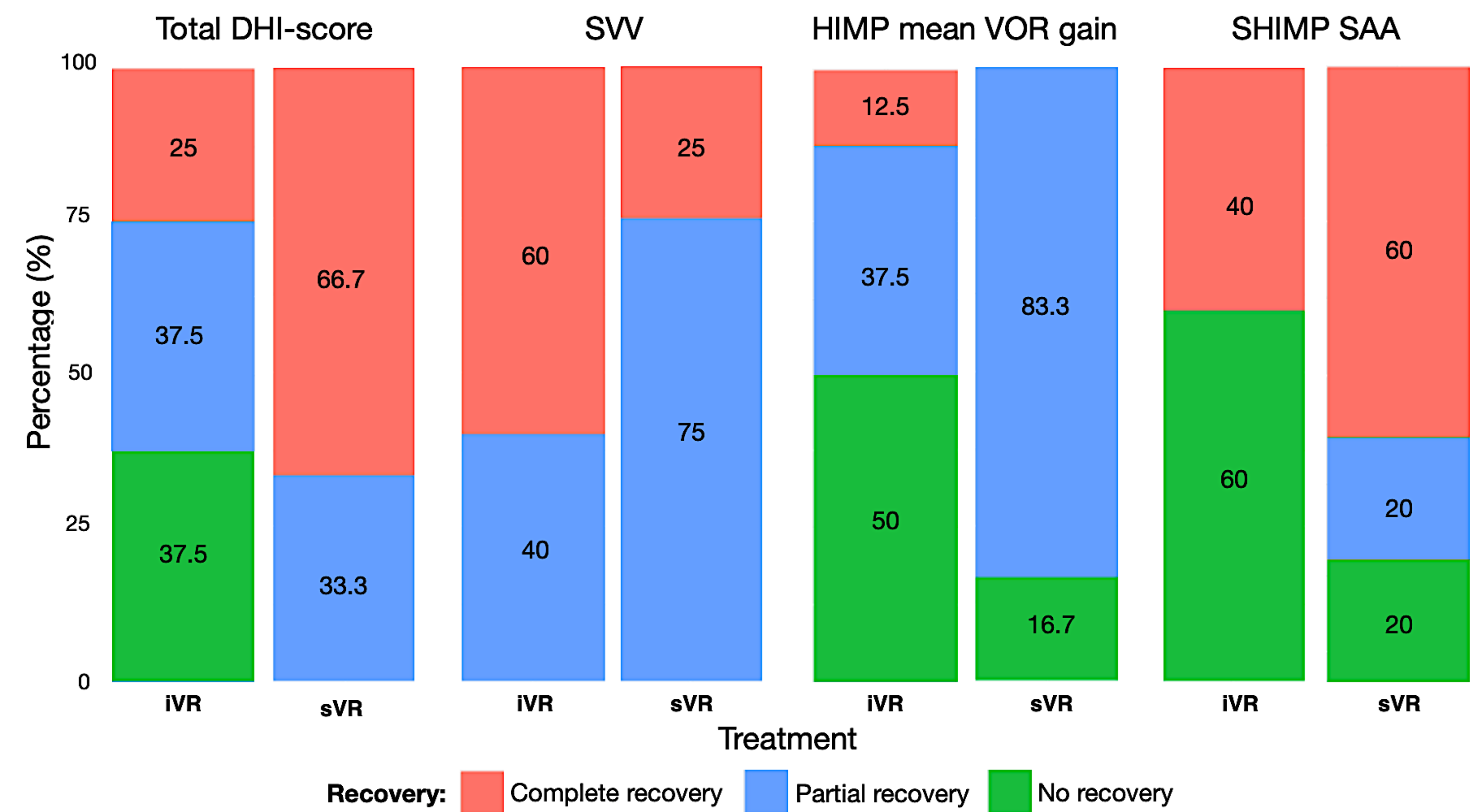
# The effect of supervised- and unsupervised vestibular rehabilitation, and the association of SHIMP anti-compensatory saccade amplitude asymmetry with objective and subjective parameters in patients with vestibular neuritis - preliminary data

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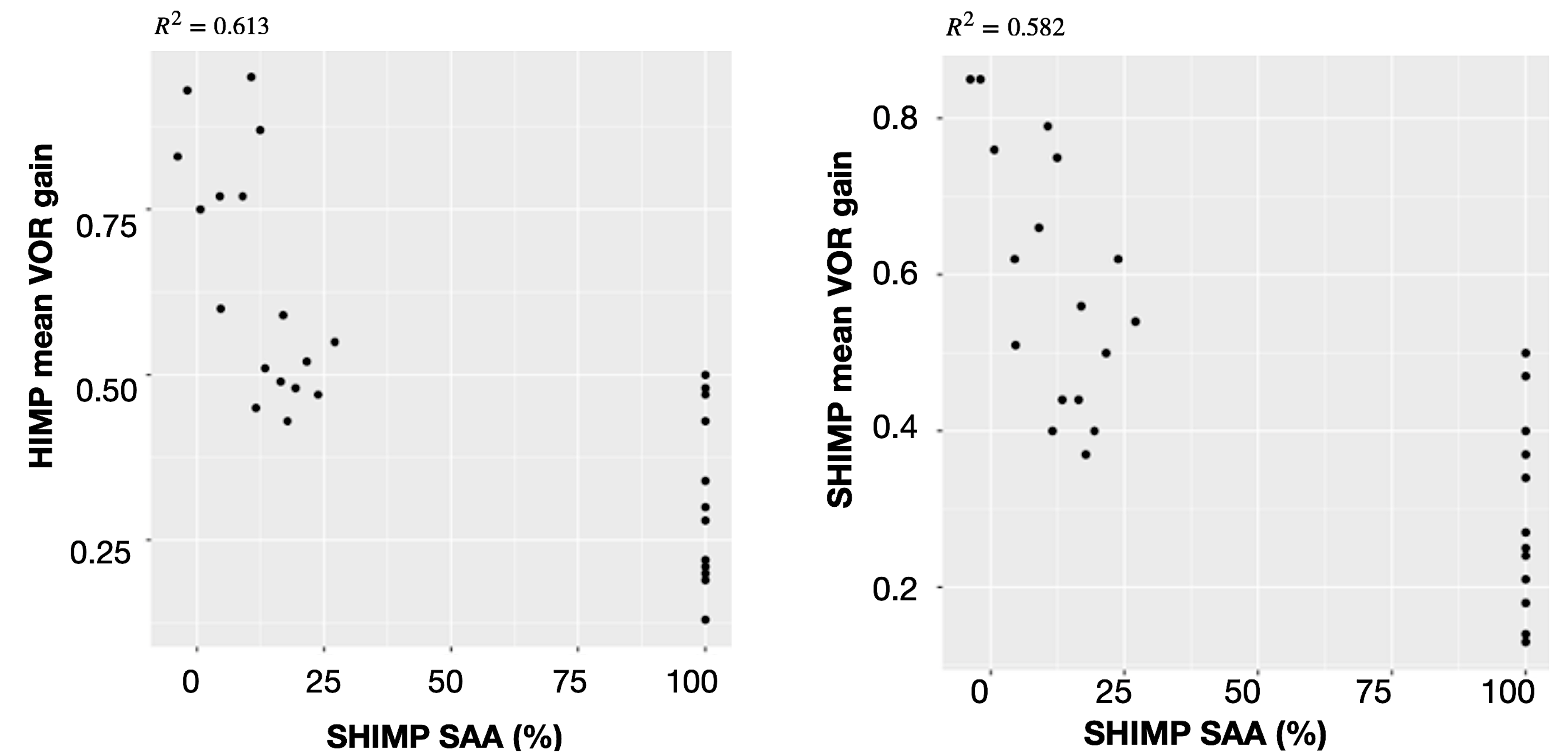
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**Figure 1:** One-month recovery rate for affected parameters at inclusion for the uVR and sVR groups. Value within boxes represents percentage. uVR: unsupervised vestibular rehabilitation + prednisolone. sVR: supervised Vestibular rehabilitation + prednisolone. Green: no recovery. Blue: partial recovery. Red: complete recovery. DHI: Dizziness Handicap Inventory. HIMP mean VOR gain: Head Impulse Paradigm mean Vestibuloocular Reflex gain. SHIMP SAA: Suppression Head Impulse Paradigm Saccade Amplitude Asymmetry. SVV: Subjective Visual Vertical.



**Figure 2:** Scatterplots depicting the association between SHIMP SAA, SHIMP mean VOR gain and HIMP mean VOR gain. Pooled data at inclusion and at one-month follow-up was plotted. HIMP mean VOR gain: Head Impulse Paradigm mean Vestibuloocular Reflex gain. SHIMP mean VOR gain: Suppression Head Impulse Paradigm mean Vestibuloocular Reflex gain. SHIMP SAA: Suppression Head Impulse Paradigm Saccade Amplitude Asymmetry.

## Introduction

Vestibular neuritis (VN) is a common cause of acute unilateral vestibular loss leading to static and dynamic vestibular dysfunction due to vestibular asymmetry. Recovery occurs through central compensation and/or peripheral vestibular recovery. Correct treatment accelerates recovery. Conventional treatment include sedative agents (e.g. antihistamines), corticosteroid treatment and vestibular rehabilitation (VR). VR treatment facilitates central compensation, adaptation (Vestibuloocular reflex (VOR) improvement), substitution (saccadic substitution), habituation (desensitization of vertigo) and postural control. Despite treatment, some patients never fully recover. Static vestibular dysfunction recover spontaneously within weeks, whereas dynamic vestibular dysfunction recovers in months to years.

## Methods

Randomised controlled prospective study with 14 VN patients block-randomized to undergo either six weeks of customized supervised VR (n=6) or non-customized homebased unsupervised VR (n=8) as concomitant treatment to 50 mg prednisolone treatment daily for 10 days. Complete video Head Impulse Test (Head Impulse Paradigm (HIMP) and Suppression Head Impulse Paradigm (SHIMP), Subjective Visual Vertical (SVV) and Dizziness Handicap Inventory (DHI) scores were obtained for patients at inclusion and at one-month follow-up.

Recovery rates for the two VR groups were compared, and the correlation of SHIMP saccade amplitude asymmetry (SAA) with subjective and objective vestibular parameters was assessed.

## Results

**Recovery rates:** The sVR group had a higher degree of recovery (partial/complete) compared to the uVR group for all parameters with exception of SVV. None of the differences between groups were significant: DHI score ( $p=0.161$ ), SVV ( $p$ =not available), HIMP VOR mean gain ( $p=0.215$ ) and SHIMP VOR mean gain ( $p=0.33$ ).

**SHIMP SAA correlation:** No correlation was found between SHIMP SAA and total DHI-score ( $R^2=0.0029$ ) or SHIMP SAA and SVV angle of deviation (SVV 0°  $R^2=0.07$ , SVV 15°  $R^2=0.01$ , and SVV 30°  $R^2=0.00$ ). A moderate correlation was found between SHIMP SAA HIMP mean VOR gain ( $R^2=0.61$ ) and SHIMP SAA and SHIMP mean VOR gain ( $R^2=0.58$ ).

## Conclusion

Preliminary results suggest a short-term superior effect of supervised VR compared to unsupervised VR as concomitant treatment to prednisolone treatment in VN patients at one-month follow-up. Supervised VR results in faster subjective and dynamic vestibular recovery but no effect was seen with static vestibular recovery rate. Furthermore, SHIMP SAA reflect SCC function and may be used as an early clinical sign of dynamic vestibular recovery compared to HIMP saccades. Longer follow-up period and a larger cohort is required in order to conclude whether or not supervised VR should be recommended as standard concomitant treatment of VN patients.

Disclosure: No conflicts of interest.  
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