Balance

The impact of NF2 on balance is an area where it has the most significant impact upon quality of life; up to 64% of individuals are restricted in their ability to perform routine daily activities and a further 14% unable to perform them at all (Hornigold 2012).

A normal sense of balance and spatial orientation relies upon accurate visual, peripheral vestibular and proprioceptive inputs to the vestibular nuclei in the brainstem. The resultant vestibulo-ocular and vestibulo-spinal reflexes provide gaze stabilization and the ability to adapt to any sudden changes in posture. The impact of unilateral vestibular schwannomas upon peripheral vestibular function is recognized to be inevitable but variable (Gianoli 2012). The impact of the bilateral vestibular schwannomas of NF2 upon vestibular function is far greater. Despite this, the decline in peripheral vestibular function with smaller tumours is often gradual and can enable physiological compensation mechanisms to provide adequate balance in day to day activities; although this does not hold true in more challenging vestibular environments, such as when there is low light or uneven ground. Sudden loss of vestibular function through disease progression or surgical management with the resultant complete vestibular hypofunction provides significant stability challenges. The compounding impact of any spinal or peripheral nerve tumours in addition to any visual impairment must also be taken into consideration. There is limited evidence to support the best way to rehabilitate vestibular hypofunction in NF2.

Without active vestibular rehabilitation it is recognized that there is a limited prospect for recovery of vestibular function independent of age or severity of the vestibular hypofunction (Zingler 2008). Active vestibular rehabilitation can help to improve quality of life and subjective balance perception and is an essential component in the management of patients with NF2 (Porciuncula 2012).

4. Porciuncula F, Johnson CC, Glickman LB. The effect of vestibular rehabilitation on