

Introduction

➤ A concussion is a complex pathophysiological process affecting the brain that can be caused by a direct blow to the head, or elsewhere on the body with an "impulsive" force transmitted to the head.¹

➤ Auditory processing deficits refer to a disruption in the processing of auditory information by the central nervous system.²

➤ Focal and localized brain lesions to various structures of the auditory pathway disrupt auditory processing, whilst preserving peripheral auditory perception^{3,4}

➤ A single case study found that a mild traumatic brain injury caused deficits for certain aspects of central auditory processing, including dichotic hearing, duration pattern recognition, compressed speech and competing speech comprehension⁵

Method

Participants

- 16 university athletes
- men⁶
- 8 sustained a sport-related concussion
- No otologic problem

Method

Peripheral auditory functioning

- Detection (250-8000Hz)
- Speech perception in silence



Central auditory processing

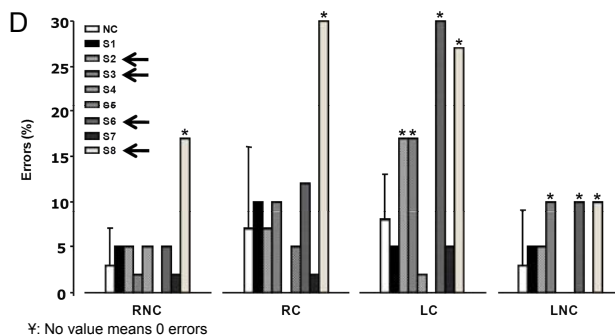
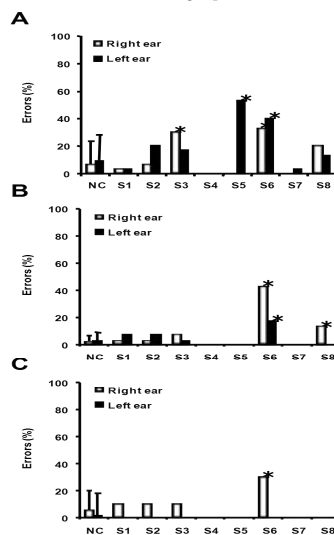
- Tone-Pattern Recognition
 - A. Frequency Pattern Sequence test⁷
 - B. the Duration Pattern Sequence test⁸
- Monaural separation/closure
 - C. Synthetic-Sentence Identification in Ipsilateral Competing Message (SSI-ICM)⁹
- Dichotic listening ability (binaural integration)
 - D. SSW¹⁰

Results

Peripheral auditory functioning

Normal functioning of the peripheral auditory system for all athletes

Central auditory processing



Normal functioning of central auditory processing for all non-concussed athletes

Conclusions

➤ 65% of the concussed athletes (5 out of 8) made significantly more errors than the non-concussed group in at least one of these tasks

➤ Different pattern of deficit

- the assessment of auditory processing requires an extensive testing battery of auditory functions
- an auditory processing disorder can manifest itself through various profiles of deficits¹¹

➤ A systematic evaluation of auditory function might be considered following a sport-related concussion and other head injuries

Références

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