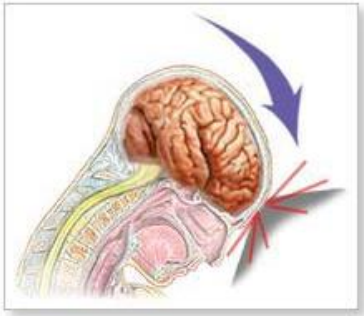
L’importance d’évaluer la récupération d’une commotion cérébrale à l’aide de la pensée et du mouvement en même temps !

Repenser la manière dont nous retournons au jeu



Brian Babineau/NHLI via GettyImages

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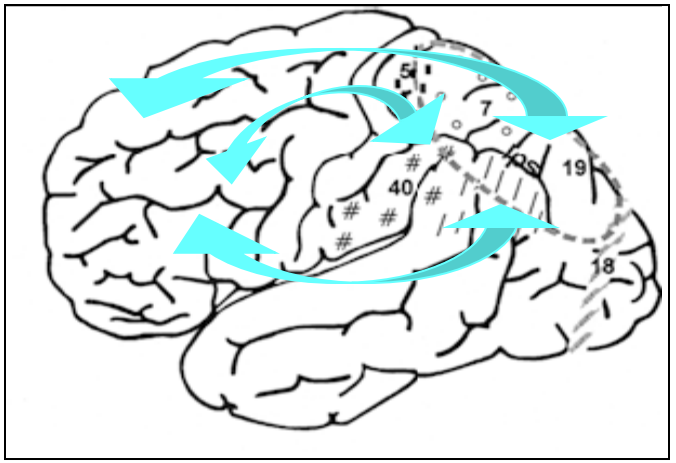
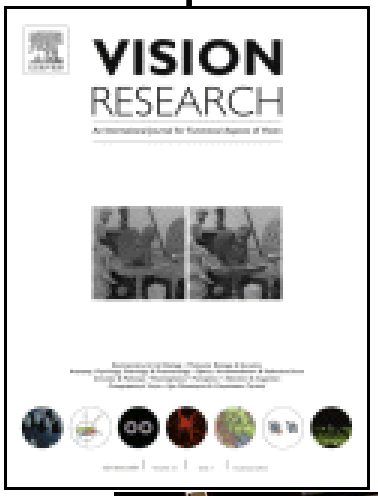
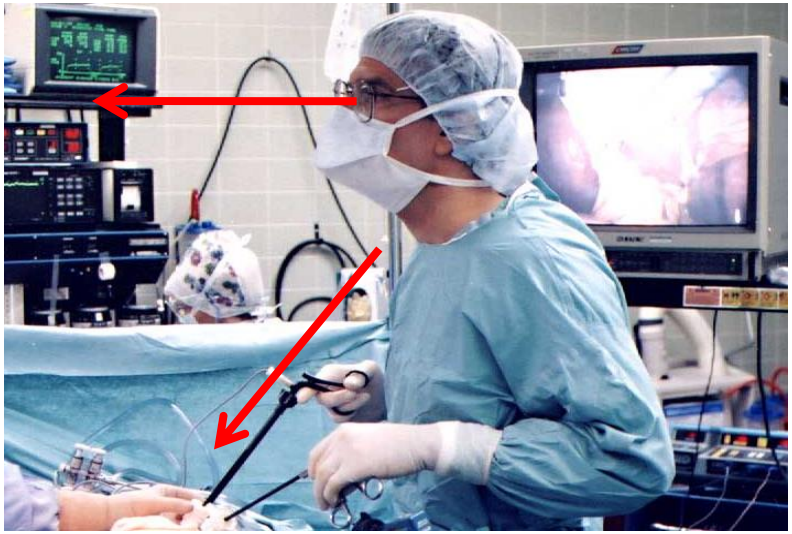
1er fait intéressant

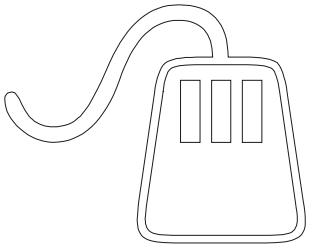
- L'intégration cognitivo-motrice est un outil sensible et rapide pour mesurer le fonctionnement du cerveau.

Le CERVEAU ne conserve pas ces processus dans des endroits séparés (bien que les scientifiques et les cliniciens le fassent).









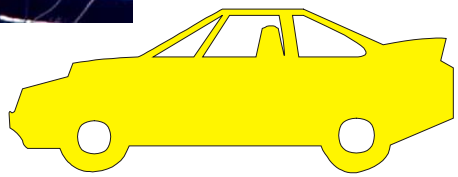
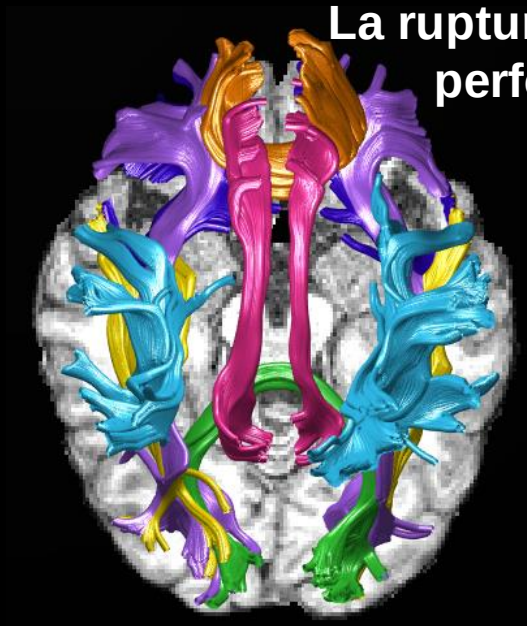


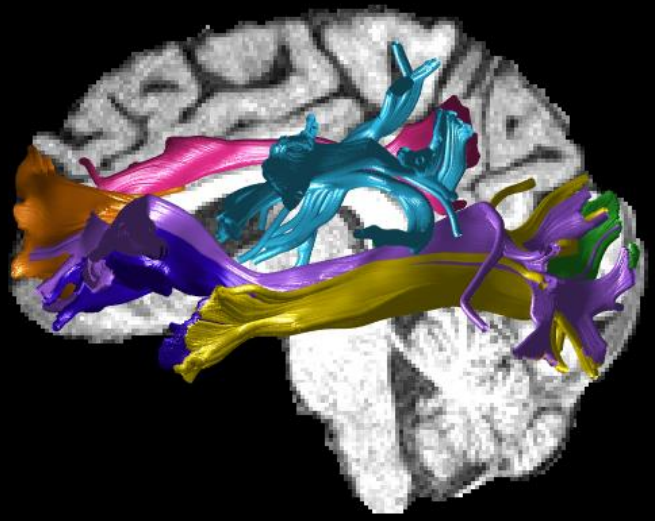
Photo: Hamilton Ontario Cardinals

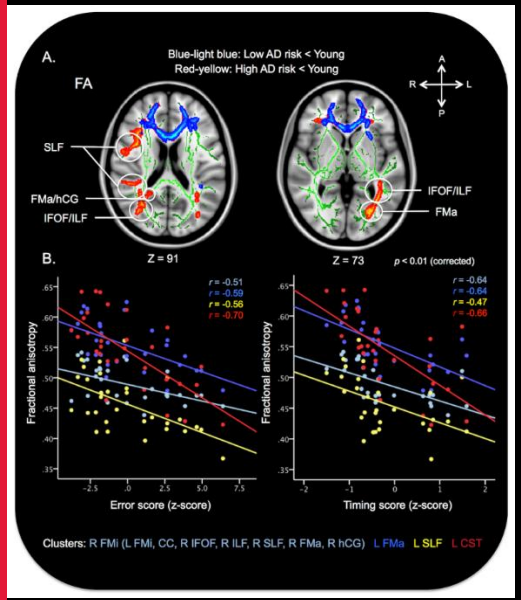
Des CONNEXIONS intactes sont nécessaires pour intégrer la cognition et l'action

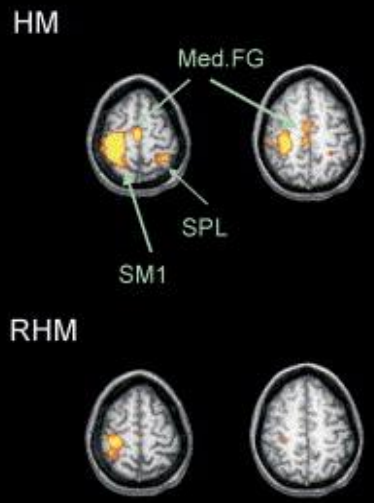
La rupture de la communication est liée à une mauvaise performance d'intégration cognitive et motrice

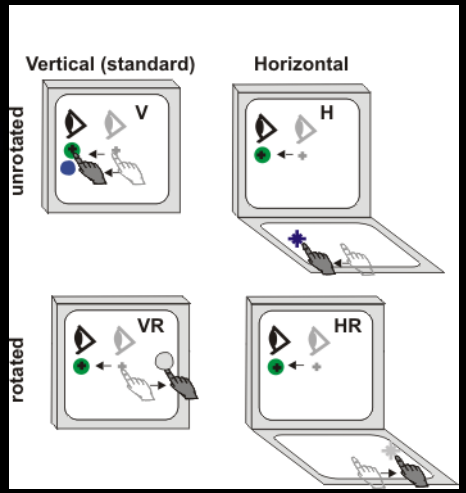


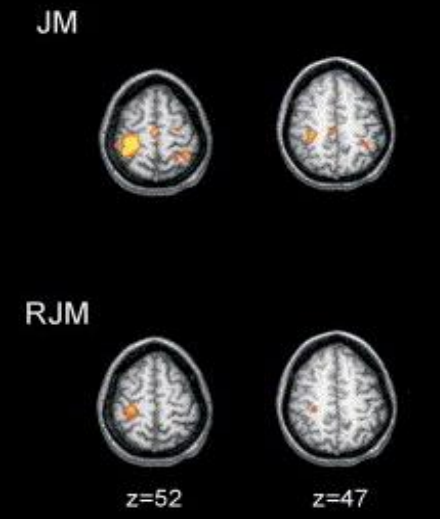
Voies qui permettent à différentes parties du cerveau de communiquer tout en pensant et en se déplaçant simultanément











2e fait intéressant

L’intégration cognitivo-motrice est altérée après une commotion cérébrale, même lorsque la cognition et le mouvement seuls sont « récupérés » (selon les critères actuels).

Retour au jeu sécuritaire

Nouvelles réflexions sur un vieux problème

Photo: F. Scott Grant, CP

Le sport exige de penser et de bouger en même temps.

Photo: Mike Ridewood, COC

Pierre Ducharme, Reuters

Photo: Hamilton Ontario Cardinals

Penser puis bouger ≠ Penser *et* bouger

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RESEARCH Open Access

Sex-related differences in visuomotor skill recovery following concussion in working-aged adults

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Abstract

Background: The ability to perform visually-guided motor tasks requires the transformation of visual information into programmed motor outputs. When the guiding visual information does not align spatially with the motor output, the brain processes rules to integrate somatosensory information into an appropriate motor response. Performance on such rule-based, "cognitive-motor integration" tasks is affected in concussion. Here, we investigate the relationship between visuomotor skill performance, concussion history, and sex during the course of a post-concussion management program.

Methods: Fifteen acutely concussed working-aged adults, 11 adults with a history of concussion, and 17 healthy controls all completed a recovery program over the course of 4 weeks. Prior to, mid-way, and following the program, all participants were tested on their visuomotor skills.

Results: We observed an overall change in visuomotor behaviour in all groups, as participants completed the tasks faster and more accurately. Specifically, we observed significant visuomotor skill improvement between the first and final sessions in participants with a concussion history compared to no-concussion-history controls. Notably, we observed a stronger recovery of these skills in females.

Conclusions: Our findings indicate that (1) concussion impairs visuomotor skill performance, (2) the performance of complex, rule-based tasks showed improvement over the course of a recovery program, and (3) stronger recovery in females suggests sex-related differences in the brain networks controlling skilled performance, and the effect of injury on these networks.

Keywords: Eye-hand coordination, Sex differences, Concussion, Human, Motor control, Psychophysics, Recovery

Background

Concussion is a form of mild traumatic brain injury (mTBI) induced by biomechanical forces that results in a complex pathophysiological condition affecting the brain [1, 2]. An impulsive blow to the head or body triggers this transient neurologic syndrome and produces a constellation of physical and cognitive symptoms, and at times, a loss of consciousness [2, 3]. Concussion presents a significant health problem and public health concern: 1.6–3.8 million sport-related concussions alone are reported annually in the United States, while it is estimated that 110 per 100,000 Canadians sustain a concussion annually [1, 4, 5]. Many patients suffering from concussion experience a gradual resolution of signs and symptoms over three months, although complete recovery can be experienced in the majority of cases by two weeks post-injury [2, 6]. Despite the optimistic prognosis, some individuals do not recover within this expected timeframe and are described as experiencing persistent symptoms [7]. These

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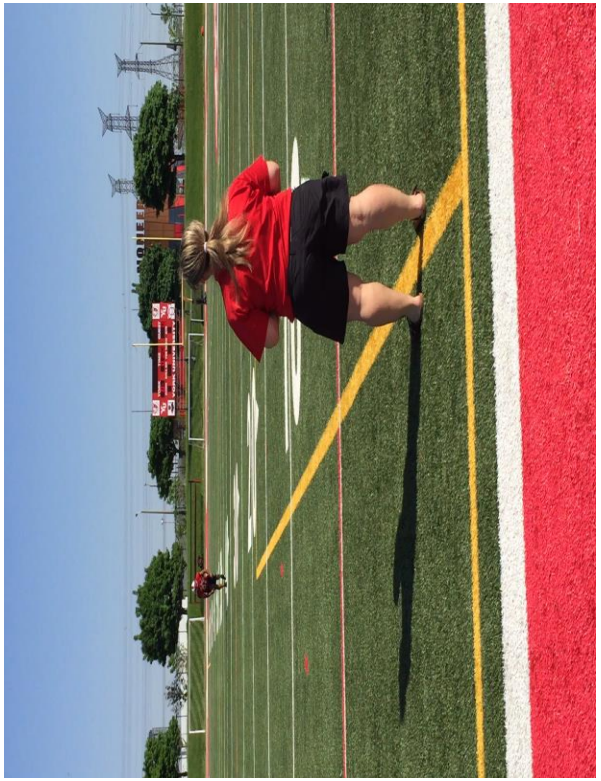

Sommaire

- Les troubles cognitifs et moteurs consécutifs à une commotion cérébrale sont peut-être liés à une altération de la communication entre les zones du cerveau.
- Une évaluation intégrée des systèmes corporels est essentielle pour assurer un retour en toute sécurité à l'apprentissage/au travail/au jeu après une lésion cérébrale.
- Non présenté, mais heureuse d'en discuter : Une formation et une expérience multi-domaines renforcent ces réseaux.

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