

CANDIDATE FOR MEMBER-AT-LARGE

Niklas Marklund, Lund University, Sweden

BIOGRAPHICAL INFORMATION

I am since 2016 the professor of Neurosurgery, Lund University, Sweden. I conduct neurotrauma research that include studies of clinical severe traumatic brain injury (TBI) and neurocritical care, animal modeling of TBI, and sports-related concussion. I have since many years performed research on athletes with persisting post-concussion symptoms using biomarkers, neuroimaging, and functional testing. Additionally, I conduct studies on acute aspects of sports concussion, including biomarker and neuroimaging studies in boxers, and selective head-neck cooling as a treatment option. I am the 1st chair and co-founder of the recently formed Swedish Sports Concussion Society, and e.g. an invited international expert of the Research Forum on Concussion in Sport, for The Department for Digital, Culture, Media & Sport (DCMS) and Medical Research Council (MRC), UK.

Based on my ongoing broad scientific activities in the concussion in sport field, I hope you find me eligible for a position in the CISG Board.

CANDIDACY STATEMENT

Here I wish to provide my candidacy statement for the CISG Board, and my background is also outlined in the short bio I attached. In short, I am a neurotraumatologist conducting both experimental and clinical research. I have since many years performed research on athletes with persisting post-concussion symptoms using biomarkers, neuroimaging including ultra-high field strength MRI and PET, and neuropsychological testing. Some key findings from my group are a) we identified the inferior vestibular nerve as a key contributor to the balance problems experienced by athletes, b) we observed increased tau aggregation in young athletes using PET scanning and c) a persistent inflammatory response in cerebrospinal fluid up to several years post-concussion. I also conduct studies on acute aspects of sports concussion, including biomarker and neuroimaging studies in boxers. We also showed that selective head-neck cooling after concussion in elite ice hockey (initiated at a mean of 11 min post-concussion) resulted in shorter duration of symptoms. I was also the 1st chair and co-founded Swedish Sports Concussion Society, and have lectured extensively at the national and (in particular) international level on sports concussion for many years.

My vision for CISG is that it will keep, develop and improve its well-deserved status as the most influential association world-wide on sports concussion. Creating awareness, and dissemination, of its recommendations is paramount and for credibility, the suggestions and recommendations put forward by the CISG should be generalizable to wide regions of the world. At present, some recommendations may have been received as less applicable to e.g. a European setting, and

modifications and adjustments may be needed to implement them. For this, developed collaboration with e.g. national societies is needed.

I attended the last two CISG conferences in Berlin and in Amsterdam and have overall been impressed with the work and scientific rigor included in each session. There are, however, several areas that require additional focus in the upcoming conferences, and there are emerging topics that need to be addressed. In my mind, the following topics are the most important to enable better management after concussion in sport, and to improve long-term brain health of the concussed athletes.

- Return-to-play protocols and minimum duration to return to full- contact sport. What is, really, the duration of the vulnerable period following a concussion?
- More robust recommendation on when an athlete should (have to) retire from sports
- Sex differences in injury mechanisms, concussion management and long-term outcome
- Time for safe introduction of tackles/headers/potential head impact in youth sports
- Long-term brain health, and current evidence and controversies of CTE
- Treatment options (concussion rehabilitation techniques and pharmacology, above all)
- Biomarkers and advanced neuroimaging are emerging topics- and could have a role in the evaluation of concussed athletes, and of early diagnosis

Obviously, no one should work on all of these combined and the topics closest to my heart are biomarkers/Neuroimaging, and long-term brain health and CTE/aggregation of phosphorylated tau.