

IV. The State of CTE Science Is Not A Known Fact

261. The First International Conference on Concussion in Sport was held in Vienna in 2001. It was chartered by the International Olympic Committee, FIFA, and the International Ice Hockey Federation. Its objectives were to provide recommendations for the improvement of safety and health of athletes who suffer concussive injuries in sport. To this end, a range of experts were invited to both meetings to address specific issues of epidemiology, basic and clinical science, injury grading systems, cognitive assessment, new research methods, protective equipment, management, prevention, and long-term outcome. (Declaration of Mark R. Lovell, App. Tab 95).

262. The Summary and Agreement Statement issued by the First International Conference on Concussion in Sport in 2001 does not mention chronic traumatic encephalopathy or any other long-term neurocognitive disease as a potential risk of concussions. (Lovell Declaration at Ex. 1, App. Tab 95).

263. The Summary and Agreement Statement issued by the First International Conference on Concussion in Sport in 2001 stated “the science of concussion is at the early stages and therefore management and return to play

**decisions remain largely in the realm of clinical judgment on an individual basis.”
(Lovell Declaration at Ex. 1, App. Tab 95).**

264. The Second International Conference on Concussion in Sport was held in Prague in 2004. The Summary and Agreement Statement issued by the Second International Conference on Concussion in Sport in 2004 does not mention chronic traumatic encephalopathy or any other long-term neurocognitive disease as a potential risk of concussions. (Lovell Declaration at Ex. 2, App. Tab 95).

265. The Summary and Agreement Statement issued by the Second International Conference on Concussion in Sport in 2004 continued to state that “the science of concussion is at an early stage, and therefore management and return to play decisions remain largely in the realm of clinical judgment on an individual basis.” (Lovell Declaration at Ex. 2, App. Tab 95).

266. The Third International Conference on Concussion in Sport was held in Zurich in 2008. The Consensus Statement on Concussion in Sport issued by the Third International Conference on Concussion in Sport in 2008 stated with regard to “chronic traumatic brain injury”: “Epidemiological studies have suggested an association between repeated sports concussions during a career and late life cognitive impairment. Similarly, case reports have noted anecdotal cases where neuropathological evidence of chronic traumatic encephalopathy was observed in retired football players. Panel discussion was held and no consensus was reached on the significance of such observations at this stage. Clinicians need to be mindful of the potential for long-term problems in the

management of all athletes.” (Lovell Declaration at Ex. 3, App. Tab 95) (emphasis added).

267. The Fourth International Conference on Concussion in Sport was held in Zurich in 2012. The Consensus Statement on Concussion in Sport issued by the Fourth International Conference on Concussion in Sport in 2012 stated with regard to chronic traumatic encephalopathy: “[I]t was . . . agreed that a cause and effect relationship has not been demonstrated between CTE and concussions or exposure to contact sports. At present, the interpretation of causation in the modern CTE case studies should proceed cautiously.” The 2012 Consensus Statement further stated: “It was agreed that CTE represents a distinct tauopathy with an unknown incidence in athletic populations. It was further agreed that CTE was not related to concussions alone or simply exposure to contact sports. At present, there are no published epidemiological, cohort or prospective studies relating to modern CTE. Owing to the nature of the case reports and pathological case series that have been published, it is not possible to determine the causality or risk factors with any certainty. As such, the speculation that repeated concussion or sub-concussive impacts cause CTE remains unproven.” (Lovell Declaration at Ex. 4, App. Tab 95) (emphasis added).

268. A 2014 paper written by Christine M. Baugh, Clifford A. Robbins, Robert A. Stern, and Ann C. McKee, MD, entitled “Current Understanding of Chronic Traumatic Encephalopathy,” stated “our neuropathologic understanding of CTE is based on a biased sample of individuals who are predominantly among

those most exposed to repetitive head impacts (eg, professional football players, professional boxers). That 2014 paper also voiced the concern that

As CTE research has a particular ability to be misunderstood by the lay public and sensationalized in the media, caution needs to be exercised when discussing results of scientific studies and generalizing the results to the population as a whole. Many individuals have some history of head impacts incurred through sports participation or other activities. However, the pathological mechanism linking this initial trauma, whether concussive or subconcussive, to later-life CTE, pathology has yet to be elucidated. Furthermore, without a more complete understanding of the incidence, prevalence, and possible risk factors that lead to the development of CTE, it is impossible for the general population to accurately assess their risk of CTE. Unfortunately, the popular media, which has reported on CTE because of its association with professional athletics, often does not present findings with the same accuracy, caution, or contextualization as the original peer-reviewed scientific publications. In order to avoid causing undue panic in individuals who have a history of concussions or other traumatic brain injuries, the scientific community and the media need to clearly address the considerable gaps that exist in our understanding of CTE.

(Lovell Declaration at Ex. 5, App. Tab 95) (emphasis added).

269. A 2015 paper published by the Department of Defense entitled “Literature Review: The Biological Basis of Chronic Traumatic Encephalopathy Following Blast Injury,” stated:

The current state of the science does not allow for a conclusive determination of whether exposure to head injury is associated with the development of CTE pathology or clinical symptoms. Existing data are limited, observational in nature, and subject to several methodological concerns, leading some researchers to question whether CTE is a unique neurodegenerative disease. CTE has drawn significant public and media attention given the large at-risk population (e.g., military service members, contact sport athletes). Experts have noted concern over the potential clinical and legal consequences of widespread misunderstanding of CTE. In light of these factors, the need for additional research is clear, particularly population-based studies, the use of standardized pathology protocols, and the development of clinical diagnostic criteria.

The 2015 DOD paper further stated that **“the evidence does not allow for a conclusive determination of whether exposure to head injury is sufficient and causative in the development of CTE pathology.”** (Lovell Declaration at Ex. 6, App. Tab 95) (emphasis added).

270. The National Institute of Health stated in a report published in 2015 that “[i]t is also especially important for the community to understand that it is not yet possible to correlate clinical symptoms or future brain health with the signature pathologic feature of CTE.” (Lovell Declaration at Ex. 7, App. Tab 95).

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