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## **Concussion and the autonomic nervous system: An introduction to the field and the results of a systematic review.**

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### **BACKGROUND:**

Recent evidence suggests that autonomic nervous dysfunction may be one of many potential factors contributing to persisting post-concussion symptoms.

### **OBJECTIVE:**

This is the first systematic review to explore the impact of concussion on multiple aspects of autonomic nervous system functioning.

### **METHODS:**

The methods employed are in compliance with the American Academy of Neurology (AAN) and PRISMA standards. Embase, MEDLINE, PsychINFO, and Science Citation Index literature searches were performed using relevant indexing terms for articles published prior to the end of December 2016. Data extraction was performed by two independent groups, including study quality indicators to determine potential risk for bias according to the 4-tiered classification scheme of the AAN.

### **RESULTS:**

Thirty-six articles qualified for inclusion in the analysis. Only three studies (one Class II and two Class IV) did not identify anomalies in measures of ANS functioning in concussed populations.

### **CONCLUSIONS:**

The evidence supports the conclusion that it is likely that concussion causes autonomic nervous system anomalies. An awareness of this relationship increases our understanding of the physical impact of concussion, partially explains the overlap of concussion symptoms with other medical conditions, presents opportunities for further research, and has the potential to powerfully inform treatment decisions.