



PLENARY SESSION

Big Data Mining and Complexity: Addressing the digital challenges of human movement, physical activities, and sport

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From wearable sensors and physical activity apps to the datafication of sport and the vast information collected on human movement by research clinics, healthcare organisations and employers, we live in a digital world of big data. How these data are collected, stored, analysed, managed, and used is of significant concern – ranging from ethical and public health issues, which we've seen with COVID-19, to issues of discrimination, exploitation, and social inequality. The other concern is methodological: most professionals variously involved in human movement, physical activities and sport are not trained in big data mining analytics – from machine intelligence and simulation models to search algorithms and computational modelling platforms. There is also the issue of the digital twin, a virtual representation that serves as the real-time digital counterpart of a physical object or process. To what extent and in what ways (or not) are digital data valid and reliable representations of the physical world? These are the sorts of concerns this plenary will address. For my talk, I will survey the world of big data and its major areas of study, focusing on their potential for addressing the digital concerns of research in human movement, physical activities, and sport. These areas include data science, digital social science, visual complexity, e-science, and computational science. I also will highlight the wider movement of which these areas are a part, namely the complexity sciences. Whilst certainly no panacea, a complex systems approach is proving useful for making key advances in the analysis of big data and its related concerns.

Key-references

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