



**Workshop EPFL-Inria
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Title: « Using Brain-Computer Interfaces as a Tool to Improve Athletes' Performance »

Abstract:

Brain-Computer Interfaces (BCIs) are neurotechnologies which enable users to control an external device using their brain activity alone. Originally, BCIs were developed to enable paralysed patients to recover some autonomy. Indeed, using a BCI, patients could control a wheelchair by imagining left/right hand movements to make it turn left/right, for instance. This paradigm is called Motor-Imagery based BCI (MI-BCI). Nowadays, the range of applications that could benefit from MI-BCI is growing exponentially. One new and promising field of application is sports, and more specifically athletes' training. Indeed, on the one hand, motor imagery is known to be efficient to improve athletes' performance. Using BCIs, we could enable athletes' to improve their motor-imagery strategy, and thus their performance, by providing them with a real-time feedback on their brain activity. On the other hand, BCIs offer the opportunity of looking for neurophysiological markers of performance that could be trained, once more in the aim of improving athletes' performance. In this talk, we will introduce some predictors of performance revealed in the BCI literature, present how we will transfer them to the field of sports and propose innovative training procedures for athletes.