

EMSJUMP: Electrical Muscle Stimulation as a Wearable Training Tool for the Take-off Phase of Ski Jumping and its Effects on Jumping Motion

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The research presented in this thesis investigates the potential of Electrical Muscle Stimulation (EMS) as a sporting tool for augmenting the take-off phase of ski jumping. EMS is a method that involves applying electrical current to muscles to induce muscle contractions. This study seeks to explore how EMS can be integrated into ski jumping training to affect the motion and sensation of jumping. By conducting a series of user studies with ski jumpers, we evaluate the quantitative and qualitative impact of EMS on jump performance. In User Study 1, we assess the impact of EMS on squat jumps using a motion capture system. In User Study 2, we conduct a qualitative assessment of EMS effects on the motion sensation during ski jump training with ski jumpers. Our findings suggest EMS has potential benefits for improving take-off motion and aiding in the learning process of ski jumping technique by providing physical feedback that can influence motion sensation.

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