
Advertisement of master thesis in sports science

Title: Laser Tag as a training method to improve change-of-direction performance and movement strategies.

Research area: Intersection of training science, motor control, and biomechanics



Image from: <https://lazr-fitness.com/>

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Brief background: Change-of-direction (COD) movements are a frequent source of anterior cruciate ligament (ACL) injuries in evasion sports such as soccer, rugby, or basketball. Given that at least half of ACL injuries in evasion sports occur without physical contact to another player, there is the assumption that many non-contact ACL injuries could be prevented if the neuromuscular system of the athletes is conditioned appropriately. Many traditional neuromuscular training programs lack motivational aspects and do not reflect the neurocognitive challenges of evasion sports.

LAZR FITNESS () is a start-up company from Geneva (Switzerland) who has developed a modern 1-on-1 version of laser tag, which can be used as a fitness intervention. We believe that the quick lateral movements that are necessary to score points during 1-on-1 laser tag provide a unique training tool to improve COD movements.

Research goal: This project is a collaboration between the ISW and LAZR FITNESS to explore the use of their laser tag system as a change-of-direction training tool. The specific research goal is to investigate the effects of an 8-week laser tag training intervention on change-of-direction performance, knee joint biomechanics, and balancing skills in a group of sports science students.

Specific objectives for MSc student:

- Design und supervise laser tag training intervention
- Participant recruitment
- Collection and analysis of 3D motion capture data
- *Optional:* lead or contribute to scientific publication

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Project duration: WS 2022/23 (start of data collection in October 2022)