

Research Methods in Sports Science for Interdisciplinary Approaches



Deutsche
Sporthochschule Köln
German Sport University Cologne

International Summer School 20th – 26th of Aug, 2023
German Sport University Cologne

Lectures

in alphabetical order of tutors, all confirmed

Sportslaw: interpretation and evaluation of sport rules

Dr. Caroline Bechtel (Institute of Sport Law)

1

Timeslot: Wed 23 Aug, 02.00-03.00 pm

Location: Lecture hall 3, GSU main building

Abstract: *The lecture dedicates to the juridical methods of interpretation and evaluation of laws and regulations in the field of sports. It will put the focus on the interdisciplinary evaluation methods that have been developed at the Institute for sports law and are conceived specifically for rules issued by sport federations.*

Sport-medicine-associated virtual methodological visions

Professor Dr. Klara Brixius (Institute of Cardiology and Sports Medicine)

2

Timeslot: Fri 25 Aug, 09.00-10.00 am

Location: Lecture hall 3, GSU main building

Abstract: *This talk will focus on cognitive aspects of mobility related tasks and virtual reality techniques which aim to improve mobility, for example for older people.*

Basics and implementation of network meta-analyses in sport, exercise and health

Professor Dr. Lars Donath (Institute of Exercise Training and Sport Informatics)

3

Timeslot: Tue 22 Aug, 09.00-10.00 am

Location: Lecture hall 3, GSU main building

Abstract: *Next to randomized controlled trials, meta-analyses (MAs) have the highest level of evidence. While classic MAs focus on the comparison of two interventions, there are often significantly more than only two that can be compared to each other. Therefore, network meta-analyses (NMAs) provide the opportunity to consider direct and indirect comparisons of different interventions. The frequency, direction, and strength of different intervention comparisons can be used to determine a final ranking of their effectiveness.*

fNIRS and motor-cognition

Junior-Professor Dr. Ingo Helmich

(Institute of Movement Therapy and Movement-oriented Prevention and Rehabilitation)

Timeslot: Sat 26 Aug, 09.00-10.00 am

Location: Lecture hall 2, GSU main building

Abstract: *Functional Near Infrared Spectroscopy (fNIRS) is particularly useful to investigate brain functions of motor-cognition because it allows for measurements without movement restriction. Therefore, fNIRS constitutes a non-invasive, portable tool for functional monitoring and imaging of human brain hemodynamics (changes both in oxy- and deoxyhemoglobin concentration). This neuroimaging modality is also suited for populations and studies where other imaging options are limited, such as infants, children, and patients interacting freely with their environment.*

The analysis of expressive body movement

Professor Dr. Hedda Lausberg

(Institute of Movement Therapy and Movement-oriented Prevention and Rehabilitation)

Timeslot: Mon 21 Aug, 02.00-03.00 pm

Location: Lecture hall 3, GSU main building

Abstract: *In sports, expressive body movement is omnipresent: in the seconds before a soccer penalty shot, in pre-match interviews, during competitions, or in interviews and even interrogations. In these situations, the athletes' nonverbal behaviour reflects their mental state. Analysis systems like [NEUROGES](#), designed for scientific research, allow to analyse and decode these nonverbal expressions, especially in case of hand movements and gestures.*

Comparative studies in sport politics: approaches, concepts, methods

Professor Dr. Jürgen Mittag (Institute of European Sport Development and Leisure Studies)

Timeslot: Thu 24 Aug, 02.00-03.00 pm

Location: Lecture hall 3, GSU main building

Abstract: *The overall aim of the lecture is to provide a general introduction to the comparative dimension of sport studies with a particular focus on social sciences. Based on an overview of key approaches and methods the lecture will reflect on both potential and limitations of comparative approaches in sport politics.*

Mastering the heart-brain connection: harnessing HRV for optimal performance

Professor Dr. Dr. Markus Raab (Institute of Psychology)

Timeslot: Mon 21 Aug, 09.00-10.00 am

Location: Lecture hall 2, GSU main building

Abstract: *Dive into the fascinating world of psychophysiology as we explore the critical role of Heart Rate Variability (HRV) in achieving peak performance. This engaging lecture will elucidate the intricate heart-brain relationship, providing attendees with a strong theoretical and physiological background about HRV, as well as with actionable insights to enhance their resilience, emotional regulation, performance and overall well-being in preparation for the HRV workshop.*

Big data in soccer

Dr. Robert Rein (Institute of Exercise Training and Sport Informatics)

Timeslot: Tue 22 Aug, 02.00-03.00 pm

Location: Lecture hall 3, GSU main building

Abstract: *Regarding Big Data in sports (especially in high-class soccer) research questions in the area of model formation, pattern recognition and simulation of team sports are posed in particular. This includes the development in the field of data analysis and data visualisation as well as the application of modern database systems (Relational and NoSQL). The expertise lies at the intersection between movement sciences, computer science in sports and sport psychology.*

Presentation of AI-based digital tools and their use in analysing dance and sports in higher education

Professor Dr. Claudia Steinberg (Institute of Dance and Movement Culture)

Timeslot: Wed 23 Aug, 09.00-10.00 am

Location: Lecture hall 3, GSU main building

Abstract: *The use and importance of computer-aided analysis have grown rapidly, and not just in the sports sector. Furthermore, we are increasingly challenged in education and dance science to deal with key technologies such as artificial intelligence, deep learning, and human-machine interaction. Our funded research project #vortanz will be presented in this lecture. #vortanz implemented and evaluated an AI-supported assistance system for supporting movement learning processes at the university level. The successful interaction of learners, teachers, and technology that must be coordinated to create optimal learning conditions will be central to this lecture.*

Experimental research in sport social science

Professor Dr. Sebastian Uhrich (Institute of Sport Economics and Sport Management)

Timeslot: Thu 24 Aug, 09.00-10.00 am

Location: Lecture hall 3, GSU main building

Abstract: *Experiments are a key method to help establish cause-and-effect relationships in various fields of sport social science, including sport management, sport marketing, sport psychology, and sport media management. This lecture introduces fundamental concepts for conducting experimental research (e.g., basic experimental designs, creation of experimental stimuli) and also reviews more advanced topics (e.g., enhancing realism, instructional manipulation checks, increasing power by increasing effect sizes).*

Advanced performance diagnostics in elite sports

Professor Dr. Patrick Wahl (Institute of Exercise Training and Sport Informatics)

Timeslot: Fri 25 Aug, 02.00-03.00 pm

Location: Lecture hall 3, GSU main building

Abstract: *The lecture provides insights into new approaches to performance diagnostics and shows results from elite sport.*