

Sensitive Data in Sports Science - Challenges and Opportunities

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Introduction

Sport science occupies a unique position among academic disciplines due to its strong interdisciplinary nature and the wide variety of data it processes. A particular challenge lies in the handling of sensitive data, such as that involving children or clinical populations, which requires special protection, especially now with Artificial Intelligence (AI) being able to link the data to further sources and identifying participants. At the same time, there is increasing pressure to make research data openly accessible in accordance with the FAIR principles (Findable, Accessible, Interoperable, Reusable) [5], both for scientific reuse and practical application. An innovative step in this direction has been taken with the development of MO|RE data, a repository for motor research data operated by the Institute of Sports and Sports Science (IfSS) at KIT. Unlike many other repositories, MO|RE data allows researchers to upload their own datasets. However, this openness introduces significant challenges, particularly in relation to the complex requirements of German and EU data protection laws [3].

To address these challenges and to provide more robust support for researchers, MO|RE data has been further developed into the Research Data Centre (RDC) Motor Performance, see figure 1, to bundle information [4].



Figure 1: RDC Motor Performance

Although data collection in sport science is often resource-intensive, only 22% of re-

searchers share datasets via repositories, as the survey, asking sport scientists about knowledge regarding Research Data Management (RDM) in 2023 showed, see figure 2. This underuse might be tied to legal uncertainty and limited awareness of data management guidelines such as the FAIR principles and the recommendation by the German Research Foundation (DFG). In particular, there is a lack of clarity regarding how sensitive data should be handled, what constitutes valid informed consent, how data can be securely stored and shared, and how repositories should support these processes [2].

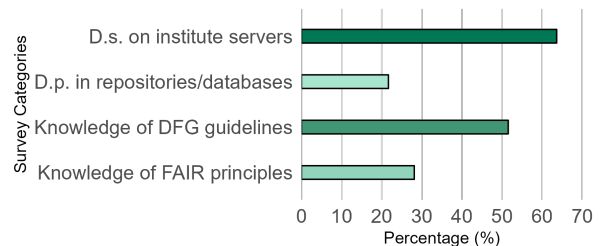


Figure 2: Parts of Survey Study [2], D = Data, s = stored, p = published

Objective

This project aims to develop a discipline-specific framework for responsible research data management in sport science, with a particular focus on the ethical and legally compliant handling of sensitive data. We focus on guidance for researchers across all stages of the data lifecycle. A central goal is to establish a consent model that enables the lawful reuse of sensitive data in future research, while respecting participants' rights and expectations. In addition, we seek to define repository-level standards and governance mechanisms that support differentiated access to sensitive data. This includes the development of licensing models that allow data contributors to retain control over how their data are accessed and reused. By focusing on

these objectives, we aim to reduce the current uncertainty surrounding the handling of sensitive data in sport science and to support a culture of openness that is both ethically responsible and legally robust.

Methods

To address the complex challenges of sensitive data management in sport science, we are working with partners from legal, technical, and disciplinary domains. In collaboration with KonsortSWD - NFDI4Society, we are developing the structure of the RDC Motor Performance. The completed cooperation with the German Society of Sports Science (dvs) ad hoc committee on RDM had the goal to identify discipline specific obstacles in the handling of data. Together with the Intellectual Property Rights team at Leibniz-Institute for Information Infrastructure (FIZ) Karlsruhe, we are developing a legally robust informed consent template.

Results

With KonsortSWD, the last step was the implementation of Scientific Use Files with regulated access and greater control for data contributors. The collaboration with the dvs ad hoc committee on RDM resulted in a set of fact sheets. These provide sport scientists with practical orientation, helping them identify whether their work involves sensitive data and where to find further legal and ethical guidance [1]. In cooperation with FIZ Karlsruhe, we are developing a legally compliant informed consent template. This ongoing work addresses secondary data use and these results lay the groundwork for a sustainable, legally sound, and discipline-specific approach to sensitive data management. All of this comes together in the expansion of the RDC Motor Performance, to have one central access point for researchers in sport science to get support with the help of Custom Chatbots to structure relevant information optimally.

Discussion

Developing legal frameworks, consent templates, and discipline-specific guidance is only the first step. To have real impact, these resources must be actively integrated into sport science practice. A key challenge lies in ensuring that researchers are not only aware of these tools but also understand their rel-

evance and apply them effectively. This calls for targeted strategies, including integration into teaching, professional development, and institutional policies. Raising awareness and building competencies are essential to foster a culture in which responsible data management is seen as a core element of scientific quality. Looking ahead, continued collaboration across legal, ethical, technical, and disciplinary domains will be essential. Only through interdisciplinary and practice-oriented cooperation, such as our part in the Leibniz ScienceCampus DiTraRe, this work contributes to the use case "Sensitive Data in Sport Science" by highlighting the potential of AI-powered applications to advance the study of motor performance skills while addressing the responsible handling of sensitive data.

Literature

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