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Opportunities and Limits of a Disciplinary Repository Using the Example MO|RE data (eResearch Infrastructure for Motor Research Data)

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Abstract. Out of two funding periods by the German Research Foundation resulted the first disciplinary repository for sports science motor activity research data MO|RE data. MO|RE data addresses sports scientists, researchers from related disciplines and practitioners such as teachers and educators, which work with or generate human motor performance test data as well. It has five main functions: publishing, storing, searching, citing and mapping. There are still some limitations as well as not exploited opportunities. Opportunities include among others the international expansion. Limitations are e.g., that linking health and motor test data is difficult due to data protection law. The sharing of sensitive data is not possible with the current concept and needs further solutions as e.g., remote access or workstations for guest researchers. In future, those data sets must be kept in mind to cover the requirements of research data management in sports science. Overall, the need for further development and optimization of MO|RE data repository in sports science becomes apparent to maximize its potential and ensure that it meets the evolving needs of researchers in the field.

Keywords: Sport Science, Open Data, Motor Tests

1. Introduction

The Institute of Sports and Sport Science (IFSS) at the KIT is one of the biggest research centres for human motor performance testing. Meanwhile, the institute collected over 250 000 data points during (partner) projects and published 29 test profiles for different target groups, settings and motor abilities. The mostly used one is the German Motor Test for children and youth from 6 to 18 years. Until 2013, there existed no data management, storage and publication solution in sport science or regarding motor test data in general. To tackle this lack, the IFSS started the project “eResearch infrastructure for motor research data” in 2014. Partner of this project is the service team RDM at the KIT library.

Out of two funding periods by the German Research Foundation resulted the first disciplinary repository for sports science motor activity research data MO|RE data. This work displays its main functions, the upcoming opportunities and possible limitations.

2. Background

Different studies examined a great willingness to share own data and/or a great interest in using “foreign” data in different scientific disciplines [1-3]. Kloe et al. did a demand analysis in sport science in 2019. They found out, that 81.7% of sports scientists in German-speaking

countries are interested in data sharing. Out of sports scientists with own generated data it was even 91.5%. [4]

Motor test data contains numbers related to age and sex (e.g., how many push-ups achieves an 8-year-old boy?). The mostly used related data (called “additional data”) are e.g. BMI, physical activity and further health or fitness values. This means the data sets in MO|RE data are very homogenous and, in relation to data sets of nature sciences, very small and need little storage.

3. Functions of MO|RE data

MO|RE data addresses sports scientists, researchers from related disciplines and practitioners such as teachers and educators, which work with or generate human motor performance test data as well. Additionally, practitioners shall be encouraged to use MO|RE data as an information platform, e.g. to get an impression of the current research state or to compare their data (e.g. of a school class) with a scientific based data set.

For reaching those target groups different functions need to be combined. Therefore, MO|RE data provides the following functions:

- Publishing: Raw and aggregated data sets and the according metadata can be published via MO|RE data using a Creative Commons license (CC BY-SA or CC-BY). Therewith the data set is visible for other users and can be downloaded for reuse.
- Mapping: When uploading a data set, users can match variables of their file with prepared variables in MO|RE data.
- Citing: Data sets can be identified with the digital object identifier (DOI). Every data set receives an identifier when getting published.
- Storing: The publication involves the archiving of the data sets, which presents a sustainable and safe option for users to store their own data.
- Searching: In MO|RE data, users can search for test items, age, gender, authors and much more variables in single or combined search terms.

4. Opportunities and limitations

With its aims, functions and background, MO|RE data presents opportunities as well as limitations in the further development.

4.1 Opportunities

At first sight, MO|RE data is a data repository for sports scientists to archive and publish their motor test data. At the second glance, there exist much more opportunities, which are already available or can be developed with small to medium-level effort.

Within the current functions, scientists from other disciplines can upload their data as well. Big interdisciplinary questions as the correlation between motor abilities and school performance or motor abilities and health issues can be answered by bringing together the data sets. Supposedly small data sets can provide new insights when matched with others.

Furthermore, the repository is based on national and international research. Test items were chosen for their usage in Germany and abroad, to build a basis for international cooperations on data sharing.

Challenging is, how to communicate these opportunities to the according target group and to match them with the existing limitations, following in the next paragraph.

Finally, these functions can be expanded with small effort: (1) the mapping variables can be extended, for example if a related discipline wishes further group variables, (2) the search function can be developed and specified.

4.2 Limitations

Due to data protection laws, open data access does not allow other important health data (BMI, blood pressure) or information on personal data (geolocation data, social status) to be published in MO|RE data because that would make it possible to identify an individual person. However, linking the health data with the physical fitness data and follow-up data (longitudinal data sets) are of great scientific interest.

The data and information mentioned above are already available from studies, but only a very small part can be made publicly available in the database MO|RE data. The exchange of data with interested researchers therefore currently takes place mostly in person and often requires long and expensive journeys, or sometimes does not take place at all due to the high effort involved.

A protected digital space for data exchange would make it possible to link the physical fitness test data with other important data, e.g., on health, and to make these available to interested researchers while strictly maintaining data protection.

5. Discussion

With MO|RE data the first repository in sports science exists, but there are still some limitations as well as not exploited opportunities. The sharing of sensitive data is not possible with the current concept and needs further solutions as e.g., remote access or workstations for guest researchers. In future, those data sets must be kept in mind to cover the requirements of research data management in sports science. In addition, network building and establishment in the field and in the related disciplines are essential to promote sustainability. By fostering collaborations and building networks, the repository can continue to expand, providing a valuable resource for researchers in the field of sports science.

Data availability statement

This submission is not based on data.

Author contributions

All named authors contributed to this abstract: KK wrote the original draft, HK and KB reviewed and edited the draft, CN reviewed and edited the draft and she and AW made the supervision.

Competing interests

The authors declare that they have no competing interests.

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