

# TFS-Info-02c Information on applications for MR imaging data

**Version:** 1.2 from 29 Jan. 2026

**Authors:** MR Imaging Core (contact person: Dr. Steffen Ringhof)

## 1. Introduction

This information sheet describes the available MR imaging data, the corresponding application process and the review procedure for MR imaging data applications. General information on the application procedure can be found on the info sheet [TFS-Info-03 Information on use and access procedure](#).

## 2. Available MR imaging data

As part of the NAKO MRI examination, a subpopulation of around 20% of all NAKO participants undergoes imaging. The sample consists of randomly selected participants from the five MRI study centres in Augsburg, Berlin, Essen, Mannheim and Neubrandenburg, as well as from the six referring study centres in Berlin-Mitte, Berlin-Süd/Brandenburg, Düsseldorf, Freiburg, Münster and Saarbrücken. All individuals who have no contraindications (see exclusion criteria in Bamberg et al., 2024) and who are willing to take part in the approximately one-hour whole-body MRI examination are eligible to participate.

A total of approximately 30,000 individuals participated in the baseline MRI examination (2014-2019), of whom around 19,000 underwent a second MRI examination (2019-2024). As part of the third MRI examination, approx. 12,000 participants are invited for a third scan from 2024 onwards.

The MRI examinations are performed on five study-specific 3T MR systems (MAGNETOM Skyra, Siemens Healthineers, Erlangen, Germany) with identical hardware and software components. Focussing on the brain (NEURO), musculoskeletal (MSK), thoracoabdominal (BODY) and cardiovascular (CARDIO) system the following MRI sequences are acquired:

	Baseline examination (2014-2019)	First re-examination (2019-2024)	Second re-examination (from 2024 onwards)
<b>NEURO</b>	<ul style="list-style-type: none"> <li>– T1_3D_SAG (MPRAGE)</li> <li>– T2_FLAIR_2D_TRA</li> <li>– Resting_State_TRA</li> </ul>	<ul style="list-style-type: none"> <li>– T1_3D_SAG (MPRAGE)</li> <li>– T2_FLAIR_2D_TRA</li> <li>– Resting_State_TRA*</li> <li>– DTI_SliceAcc_TRA*</li> <li>– SWI_3D_TRA</li> </ul>	<ul style="list-style-type: none"> <li>– T1_3D_SAG (MPRAGE)</li> <li>– T2_FLAIR_2D_TRA</li> <li>– Resting_State_TRA<sup>§</sup></li> <li>– DTI_SliceAcc_TRA<sup>§</sup></li> <li>– SWI_3D_TRA (CAIPI)</li> </ul>
<b>MSK</b>	<ul style="list-style-type: none"> <li>– Hip: PD_FS_SPC</li> <li>– Spine: T2_TSE (cervical spine, thoracic spine, lumbar spine, COMP)</li> </ul>	<ul style="list-style-type: none"> <li>– Hip: PD_FS_SPC</li> <li>– Spine: T2_TSE (cervical spine, thoracic spine, lumbar spine, COMP)</li> </ul>	<ul style="list-style-type: none"> <li>– Hip: PD_FS_SPC (CS)</li> <li>– Spine: T2_TSE_DIXON (cervical spine, thoracic spine, lumbar spine, COMP)</li> </ul>

\* As part of the first re-examination, the Resting\_State\_TRA was performed on the first 500 participants and the DTI\_SliceAcc\_TRA on the remaining participants at each MRI study centre.

§ As part of the second re-examination, the Resting\_State\_TRA was performed on the first 50% and the DTI\_SliceAcc\_TRA on the second 50% of all participants.

	Baseline examination (2014-2019)	First re-examination (2019-2024)	Second re-examination (from 2024 onwards)
<b>BODY</b>	<ul style="list-style-type: none"> <li>- T1_3DVIBE_Dixon_TRA</li> <li>- T2_HASTE_TRA</li> <li>- ME_3DVIBE (liver)</li> </ul>	<ul style="list-style-type: none"> <li>- T1_3DVIBE_Dixon_TRA</li> <li>- T2_HASTE_TRA</li> <li>- ME_3DVIBE (liver)</li> </ul>	<ul style="list-style-type: none"> <li>- T1_3DVIBE_Dixon_TRA</li> <li>- T2_HASTE_TRA</li> <li>- ME_3DVIBE (liver)</li> <li>- Body_DWI (liver)</li> </ul>
<b>CARDIO</b>	<ul style="list-style-type: none"> <li>- MRA_Tho_COR</li> <li>- Cine_SSFP_LAX</li> <li>- Cine_SSFP_SAX</li> <li>- MOLLI_SAX</li> </ul>	<ul style="list-style-type: none"> <li>- MRA_Tho_COR</li> <li>- Cine_SSFP_LAX</li> <li>- Cine_SSFP_SAX</li> <li>- MOLLI_SAX</li> </ul>	<ul style="list-style-type: none"> <li>- AdvMRA_Dixon</li> <li>- Cine_SSFP_LAX</li> <li>- Cine_SSFP_SAX</li> <li>- MyoMaps (T1, T2, T2S)</li> </ul>

All acquired imaging data are transmitted daily via DICOM data transfer from the MRI study centres to the Centre for MRI Data Management (Fraunhofer MEVIS, Bremen). Following automated image-data quality checks, the data are made available for the web-based documentation of incidental findings (IF) and for the visual assessment of image quality by NAKO-certified radiologists. Subsequently, all image and meta data are automatically transferred to the Greifswald Integration Centre and stored in the long-term archives (PACS) of the Central Data Management (Integration Centre, Greifswald/Heidelberg).

Due to these established procedures and the high level of standardisation ensured through specific Standard Operating Procedures (SOPs), the NAKO MR imaging data demonstrate good to excellent image quality and a high degree of comparability both within and between individual MRI study centres (see Bamberg et al., 2024).

### 3. Application

The imaging data from the NAKO MRI examination can be requested for scientific research purposes through the NAKO Transfer Unit. Use and access applications can be submitted via the [TransferHub](#) web portal. Upon prior registration, applicants may access the data dictionary, including the descriptions of all study variables.

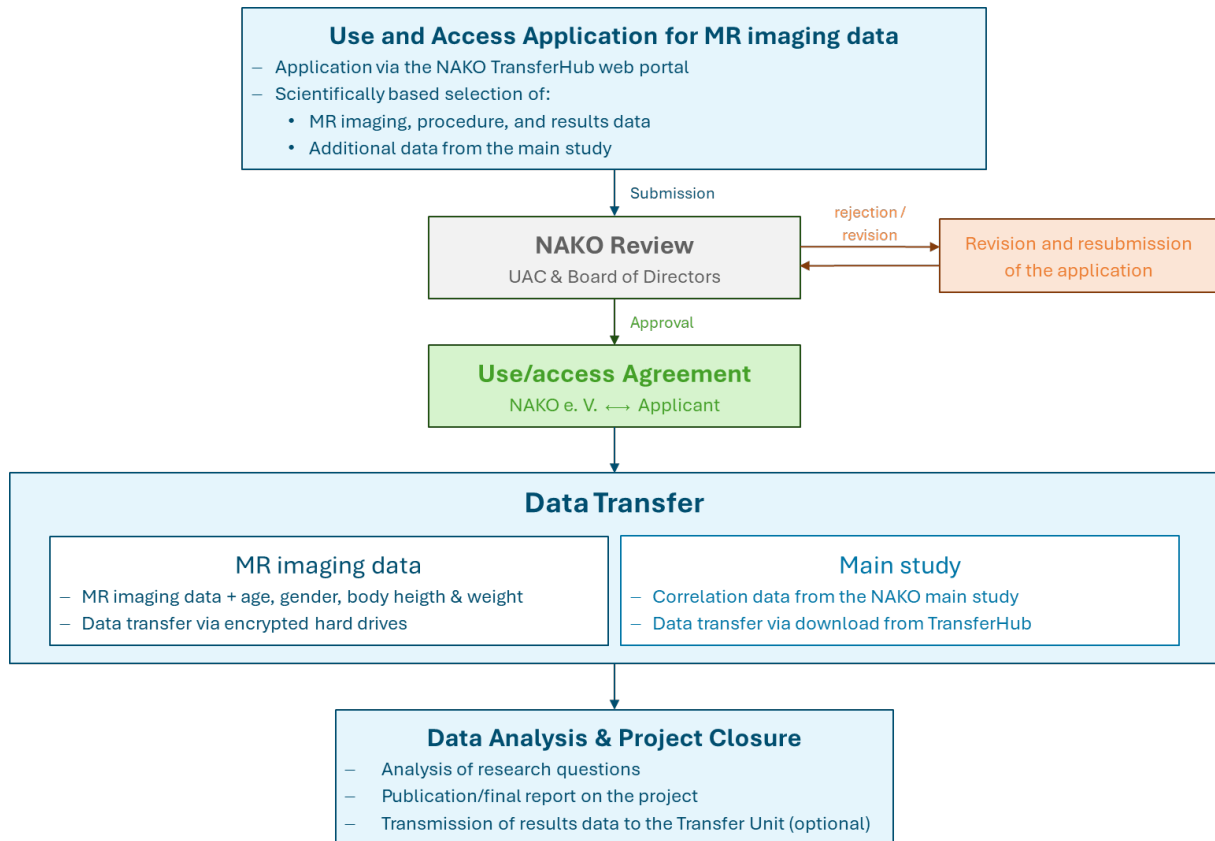
If MR imaging data is required as part of a use and access application, these variables must be selected in the *Data* tab of the data dictionary under *MRI examination > MR imaging data*. Only the variables listed there may be evaluated and transferred to the applicant. If use-restricted variables or non-defaced neuro datasets are requested, additional justification must be provided to explain the necessity of these specific MRI datasets. With the exception of the defaced neuroimaging data (provided in NIfTI format), all MR imaging data from the NAKO MRI examination are available in DICOM format. Raw k-space data cannot be provided within NAKO.

In addition to the MR imaging data themselves, further variables relating to the examination procedure, the contraindication assessment and the incidental IF reading from the MRI examination may also be requested. Moreover, a range of results data from the baseline MRI examination (including data on the brain, aorta, kidneys, liver and body composition) is already available for retrieval.

If applicants are interested not only in the MRI examination but also in study variables from the main study, the selection and necessity of these variables must likewise be justified in the application and taken into account when assembling the variable sets. At this point, we refer to Section 1.1.7 of the information sheet [TFS-Info-03 Information on use and access procedure](#).

## 4. Application review

The detailed application review is described in Section 1.2 of the information sheet [TFS-Info-03 Information on use and access procedure](#). Only the additional review steps are described here. A schematic representation of the workflow can be found in **Figure 1**.



**Figure 1: MR imaging data application workflow**

### 4.1. Review by Use and Access Committee

Following the formal review of an application by the Transfer Office, the Use and Access Committee (UAC) assesses the submitted applications in accordance with the provisions of the [NAKO Use and Access Policy](#). For deliberations concerning the use of MR imaging data, additional experts from the module coordinators (EG 15 MRI) may be consulted as needed to provide an assessment of the proposed projects. Once the review has been completed, the results are communicated to the Transfer Office.

### 4.2. Review criteria

Use and access applications that include MR imaging data are reviewed and prioritised according to specific criteria set out in the NAKO Use and Access Policy. These criteria go beyond those applied to applications concerning only study data. The review is based on the following criteria:

- Consistency and coherence of the application with regard to the requested data and MR imaging data for the planned evaluations or analyses.
- Compliance with legal and ethical standards, particularly in cases where non-defaced brain MR imaging data are requested:
  - Such data are subject to restricted access for data-protection reasons, and their necessity must be appropriately justified.

- Applicants may be required to demonstrate how re-identification of individuals (or groups) or the linkage of different data sources will be prevented.
- Provision of these data may be subject to special conditions, may only be granted in a modified (coarsened) form, or may not be supplied in combination with certain other variables.
- The review and approval of such requests lie with the MR Imaging Core, which may involve selected experts as needed.

## 5. Data transfer

If the review results in a recommendation for approval, the procedure for NAKO use and access applications continues as outlined in Section 1.2.4 of the information sheet [TFS-Info-03 Information on use and access procedure](#).

Once the use/access agreement has been signed by both the applicant's institution and NAKO e. V., the data management team of the Transfer Unit will compile the MRI data and deliver them to the data recipients specified in the application.

### 5.1. Compilation of MRI data

As the MR imaging data are generally too large to be provided for download via the TransferHub, they can only be supplied by post on encrypted hard drives. If additional study data have been requested alongside the MR imaging data, these will be made available separately for download.

### 5.2. Provision of data carriers for MRI data

Due to the large number of parallel data compilations and transfers handled by the Transfer Unit's data management team, it is necessary that the data recipients provide the Transfer Unit with a single data carrier of sufficient capacity (e.g. an external hard drive).

Further information regarding the required storage capacity, the mandatory encryption using VeraCrypt, as well as details on addresses and shipping will be provided to applicants by the Transfer Unit's data management team via email prior to the data transfer. The general procedure for data handover can be found in Section 2.1 of the information sheet [TFS-Info-03 Information on use and access procedure](#).

### 5.3. Processing time

For the transfer of the (imaging) data, an approximate processing time of six weeks should be anticipated, taking into account the outbound and return shipment as well as the compilation of the data. Should there be any deviations, the Transfer Unit will provide notification.

## 6. Costs

The following costs must be covered by the applicant's institution for the provision of the MR imaging data:

- Provision of a data carrier of sufficient capacity (e.g. an external hard drive);
- Shipping costs for sending the encrypted hard drive to the data management team of the Transfer Unit (insured DHL parcel);
- Shipping costs for the return shipment of the hard drive (a pre-paid DHL return label must be enclosed with the parcel when sending the hard drive to data management team of the Transfer Unit).