COMPASS

A Data Management Plan created using DMPonline.be

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Project abstract:

Respiratory physiotherapy uses specific breathing techniques (e.g. autogenous drainage, active cycle of breathing techniques) to remove mucus from the lungs in patients with chronic lung diseases (cystic fibrosis, COPD, PCD, bronchiectasis, asthma) or in patients with weakened respiratory muscles (MS, ALS, Duchenne). The key concepts within this therapy include airflow modulation and modulation of the breathing level (volume) to create optimal air currents (flow) at the targeted location in the lungs. In this therapy, monitoring of specific respiratory parameters is critical to achieving therapy goals. Currently, respiratory therapists have to rely on the difficult subjective perception of e.g. chest-abdominal breathing, body position, respiratory rate and volume, as well as breathing sounds. After all, when the mucus starts to move, this is accompanied by specific respiration sounds (crackles) that contain a lot of information and that are used/interpreted by the therapist to locate the mucus and to direct the therapy during the session, in order to remove the mucus as optimally as possible. This requires great expertise from the therapists, but also involves a long learning curve for the patients.

In this project, demonstrators with real-time feedback about the respiratory flow and volume during respiratory physiotherapy, will be extended with an automatic detection and classification of the crackles, projected on the respiration curves (flow rate and volume). This will lead to an increase in the efficiency of the therapy and a better understanding of the patient.

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Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

Dataset name / ID	Description	New or reuse	Digital or Physical data	Data Type	File format	Data volume	Physical volume
		Indicate: N(ew data) or E(xisting data)	Indicate: **D**(igital) or **P**(hysical)	Indicate: **A**udiovisual **I**mages **S**ound **N**umerical **T**extual **M**odel **SO**ftware Other (specify)		Indicate: <1GB <100GB <1TB <5TB >5TB NA	
SC-LSD	Single-Channel Lung Sound Dataset	N	D	S	.wav	<100GB	
MC-LSD	Multi-Channel Lung Sound Dataset	N	D	S	.wav	<100GB	
Spiro	Spirometry dataset	N	D	N	.csv	<1GB	
Physio	Physiological parameters (heart rate, temperature, skin conductivity)	N	D	N	*csv	<1GB	
Instructions	Auditive instructions of therapist	N	D	S	.wav	<100GB	

If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:

Not applicable

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, refer to specific datasets or data types when appropriate and provide the relevant ethical approval number.

- Yes, human subject data (Provide SMEC or EC approval number below)

EC number will be added when approved.

Will you process personal data? If so, please refer to specific datasets or data types when appropriate and provide the KU Leuven or UZ Leuven privacy register number (G or S number).

- Yes (Provide PRET G-number or EC S-number below)

PRET number: [G-2023-6997](G-2023-6997)

Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, …)? If so, please comment per dataset or data type where appropriate.

- Yes

The combination of the different modalities of respiration sounds and spirometry signals is a unique combination of data which can be used in the development of applications that support the therapist and patients during therapy.

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material or Data transfer agreements, Research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.

- No

Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.

- Yes

There is a subcontracting agreement with UZ Brussel to collect the data. The IP remains with KU Leuven and Thomas More.

Documentation and Metadata

Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g. in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, codebook.tsv etc. where this information is recorded).

Metadata will be added to the collected datasets, including trial number, used hardware to collect the data, hardware settings and therapist ID. The ManGO data storage platform is used to be able to add this metadata.
A data description document will be drawn up to document the data collection process, and how to interpret the metadata.

Will a metadata standard be used to make it easier to find and reuse the data?
If so, please specify which metadata standard will be used.

If not, please specify which metadata will be created to make the data easier to find and reuse.

- Yes

It has not yet been decided if and which metadata standard will be used. We are considering to use a scheme such as DataCite.

Data Storage & Back-up during the Research Project

Where will the data be stored?

- ManGO

How will the data be backed up?

- Standard back-up provided by KU Leuven ICTS for my storage solution

Is there currently sufficient storage & backup capacity during the project?

If no or insufficient storage or backup capacities are available, explain how this will be taken care of.

- Yes

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

The access to the data folder will be restricted to the specific researchers working on the data. The ManGO platform allows for a strict separation of access for different users.

What are the expected costs for data storage and backup during the research project? How will these costs be covered?

The data storage volumes in this project are relatively low. We expect that the freely provided offering will be sufficient for our needs.

Data Preservation after the end of the Research Project

Which data will be retained for 10 years (or longer, in agreement with other retention policies that are applicable) after the end of the project?

In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).

- All data will be preserved for 10 years according to KU Leuven RDM policy

Where will these data be archived (stored and curated for the long-term)?

- KU Leuven RDR

We are exploring the possibilities to archive the data in the KU Leuven RDR.

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

The data storage volumes in this project are relatively low. We expect that the freely provided offering of 50 GB will be sufficient for our needs for a long term storage.

Data Sharing and Reuse

Will the data (or part of the data) be made available for reuse after/during the project?
Please explain per dataset or data type which data will be made available.

- Yes, as restricted data (upon approval, or institutional access only)
- SC-LSD and MC-LSD: only the cleaned and labelled data can be shared
- Spiro: only the cleaned and labelled measurements can be shared

- Physio: only the cleaned and labelled measurements can be shared
- Instructions: only the transcribed instructions can be shared

If access is restricted, please specify who will be able to access the data and under what conditions.

The data may be used in future projects including different partners. In this situation, KU Leuven and Thomas More both agree to grant this third party access to (parts) of the dataset.
In case of a commercial interest in parts of the dataset, a third party can be given access to these parts after a Data Transfer Agreement has been drawn up.

Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)?

Please explain per dataset or data type where appropriate.

- Yes, privacy aspects
- Yes, ethical aspects

The SC-LSD, MC-LSD, Spiro and Physio dataset contain ethical aspects due to clinical information that is recorded within the data.
The Instructions dataset contains privacy aspects, therefore only the transcribed version could be shared.

Where will the data be made available?

If already known, please provide a repository per dataset or data type.

- KU Leuven RDR (Research Data Repository)

We are exploring the possibilities to archive the data in the KU Leuven RDR.

When will the data be made available?

- Upon publication of research results

Which data usage licenses are you going to provide?

If none, please explain why.

- Data Transfer Agreement (restricted data)

Do you intend to add a persistent identifier (PID) to your dataset(s), e.g. a DOI or accession number? If already available, please provide it here.

- Yes, a PID will be added upon deposit in a data repository

What are the expected costs for data sharing? How will these costs be covered?

Not know yet.

Responsibilities

Who will manage data documentation and metadata during the research project?

- Lode Vuegen and Peter Karsmakers (KU Leuven) will manage the data documentation and metadata of the acoustical data (SC-LSD, MC-LSD, Instructions).
- Kris Cuppens and Mario Broeckx (Thomas More) will manage the data documentation and metadata of the clinical and respiration data (Spiro and Physio).

Who will manage data storage and backup during the research project?

- The COMPASS researcher who is present during the data collection will take care of uploading the collected data to the data storage provider (ManGO).
- Data backup will be done by the data storage provider (ManGO).

Who will manage data preservation and sharing?

This will be done under a joint collaboration between Lode Vuegen, Peter Karsmakers (KU Leuven) and Kris Cuppens and Mario Broeckx (Thomas More).

Who will update and implement this DMP?

This will be done by Lode Vuegen (KU Leuven) and Kris Cuppens (Thomas More).

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