Short description of algorithmic classification of PubMed at KI

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The implementation of the PubMed based algorithmic classification in the KI bibliometric system is described in this document. The classification has been created by the use of community detection in a citation network of PubMed publications (basically using the procedure in Waltman and van Eck (2012) and the Leiden algorithm (Traag et al., 2019)). Citation relations are from the NIH Open Citation Collection (iCite 2019). All articles and reviews from 1995 until the date of data extraction (currently January 2021) are included, about 17 million publications with about 380 million citation relations.

The classification is hierarchical and has 4 levels. The most granular level corresponds to research topics. Topics are grouped into research specialties, specialties into disciplines and disciplines into broad research areas. Each publication belongs to exactly one class at each level. Granularity at the level of topics and specialties has been set to render classes of approximately the same sizes as in Sjögårde and Ahlgren (2018) and Sjögårde and Ahlgren (2020) respectively.

Labels have been created by extracting noun phrases from titles, medical subject headings (MeSH), journals and author addresses. The three most relevant terms have been selected by a term-weighting approach and concatenated into a label. The labeling approach is described in Sjögårde et al. (n.d.).

## Example of the classification of a publication

“Comparison of balance and stabilizing trainings on balance indices in patients suffering from nonspecific chronic low back pain.”

Hosseinifar M, Akbari A, Mahdavi M, Rahmati M.

J Adv Pharm Technol Res. 2018 Apr-Jun;9(2):44-50. doi: 10.4103/japtr.JAPTR\_130\_18.

PMID: 30131936 Free PMC article.

Dicipline: pain; low; anesthesiology

Specialty: ergonomics; posture; vibration

Topic: abdominal muscle; transversus abdominis; core stabilityReferences

## References

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Traag, V. A., Waltman, L., & Eck, N. J. van. (2019). From Louvain to Leiden: Guaranteeing well-connected communities. *Scientific Reports*, *9*(1), 5233. https://doi.org/10.1038/s41598-019-41695-z

Waltman, L., & van Eck, N. J. (2012). A new methodology for constructing a publication-level classification system of science. *Journal of the American Society for Information Science and Technology*, *63*(12), 2378–2392. https://doi.org/10.1002/asi.22748