

A Whole-Person Function Dictionary for the Mobility, Self-Care and Domestic Life Domains: a Seedset Expansion Approach

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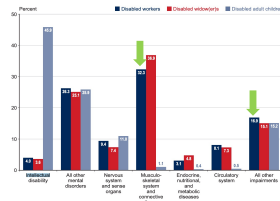


National Institutes
of Health

Clinical Center

Background

Whole-person functional limitations in the areas of mobility (MOB), self-care and domestic life (SCDL) affect most individuals with disabilities.



Motivation



Whole-person
function
information

- Lack of available dictionaries
- Share and develop common understanding and background about mobility action terms in the medical-related communities
- Improve many tasks' performance, especially in the area of information extraction

Contributions

- First publicly available dictionaries of manually annotated terms related to MOB and SCDL, to help in extracting information relevant to disability.
<https://github.com/CC-RMD-EpiBio/terminologies>
- Terminologies provide the associated ICF codes, and terms and their ICF codes have been verified by domain experts.

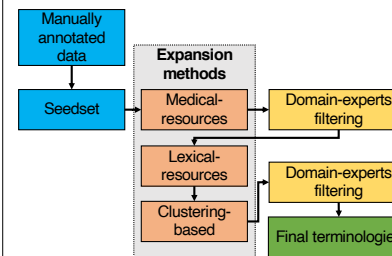
Dataset

Patient is **able to walk** with the help of cane or another assistive device. He reports that he **can take a bath** and **clean himself**

Seedset: annotated physical therapy notes from NIH Clinical center (450 MOB, 30 SCDL) and 250 consultative examination files for MOB and SCDL.

426 MOB and 298 SCDL terms

Expansion Methods



Medical resources: using UMLS and ICF and SNOMED mappings

Concepts	Domain	ICF Code	ICF Description	SNOMED CT Code	SNOMED CT Description
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT
10000000000000000000	ICF	10000000000000000000	ICF	10000000000000000000	SNOMED CT

Concept	Description	Type	Status
10000000000000000000	10000000000000000000	Active	Active
10000000000000000000	10000000000000000000	Active	Active
10000000000000000000	10000000000000000000	Active	Active
10000000000000000000	10000000000000000000	Active	Active
10000000000000000000	10000000000000000000	Active	Active
10000000000000000000	10000000000000000000	Active	Active
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10000000000000000000	10000000000000000000	Active	Active
10000000000000000000	10000000000000000000	Active	Active

Lexical resources: using VerbNet

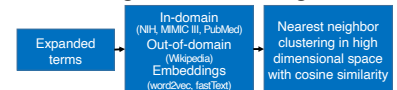
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for term in dictionary do
  clean and normalize term
  if first word of term is verb then
    get all synonyms of term
    add synonyms + term[1 : len(term)] to
    dictionary where ICF code == term's
    ICF code
  end
end

```

Challenges: multiword expressions and words that are not verbs.

Clustering and embeddings based



Results

Term Verbnet expansion terms
run fly, jog, jump, march, walk, use, play, ...
ascend climb, descend, pass, bend, run, slant, ...
ride oar, paddle, pedal, ride, row

Table 1: Examples from VerbNet expansion

Term Clustering expansion terms
ride bike, horseback, ski, bicycle
pull move, straighten, push, lift
walk ascend/descend, stair climbing, Idcw, ten-meter

Table 2: Examples from clustering expansion

