

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

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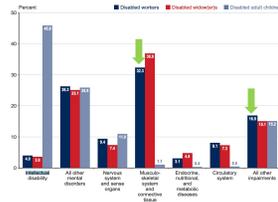


National Institutes of Health

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.

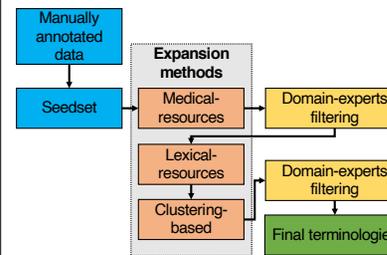
Dataset

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

ICF Code	ICF Description	UMLS CUI	UMLS Description	SNOMED CT Code	SNOMED Description
4400	Walking	C0042361	Walking	100000000	Walking
4401	Walking with assistive device	C0042362	Walking with assistive device	100000001	Walking with assistive device
4402	Walking with cane	C0042363	Walking with cane	100000002	Walking with cane
4403	Walking with walker	C0042364	Walking with walker	100000003	Walking with walker
4404	Walking with crutches	C0042365	Walking with crutches	100000004	Walking with crutches

Lexical resources: using VerbNet

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for term ∈ 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, ldew, ten-meter

Table 2: Examples from clustering expansion

