

# **SUPPLEMENTARY APPENDIX 1.** Detailed database search methodology outlining keywords, limits, screening process, and narrative synthesis approach

## **Detailed Search Strategy**

### **Databases Searched**

A structured literature search was conducted in the following electronic databases:

- PubMed (MEDLINE)
- Scopus
- Google Scholar (for supplementary and grey literature screening)

The search covered publications from **1 January 2010 to 31 December 2025**. Only articles published in **English** were included.

The final search was conducted in **December 2025**.

### **Search Strategy and Keywords**

The search strategy was developed using two core concept domains:

1. Additive manufacturing / 3D printing
2. Rehabilitation / orthoses / assistive devices

Both controlled vocabulary (where applicable) and free-text keywords were used.

### **PubMed Search Strategy**

The following combination of terms was used in PubMed:

“3D printing” OR “three-dimensional printing” OR “additive manufacturing”  
AND  
“rehabilitation” OR “physical medicine” OR “orthosis” OR “orthoses” OR “splint” OR “assistive device” OR “prosthesis” OR “prostheses”

Filters applied:

- Language: English
- Publication date: 2010–2025

### **Scopus Search Strategy**

The Scopus search was performed using title, abstract, and keyword fields with the following terms:

“3D printing” OR “three-dimensional printing” OR “additive manufacturing”  
AND  
“rehabilitation” OR “physical medicine” OR “orthosis” OR “orthoses” OR “splint” OR “assistive device” OR “prosthesis” OR “prostheses”

Limits applied:

- Publication year: 2010–2025
- Language: English

### **Google Scholar Supplementary Screening**

Google Scholar was used to identify additional relevant publications, particularly:

- Implementation studies
- Institutional reports
- Low- and middle-income country (LMIC) experiences
- Articles not indexed in PubMed

The first 200 results sorted by relevance were screened using combinations such as:

- 3D printing rehabilitation orthosis LMIC
- additive manufacturing assistive device implementation
- 3D printed orthosis low-resource setting

### **Study Selection Process**

Titles and abstracts were screened initially. Full texts were reviewed when eligibility was unclear. Duplicate records across databases were manually removed.

Due to heterogeneity in study designs, device types, and outcome measures, quantitative meta-analysis was not feasible. Findings were therefore synthesized narratively, with structured comparison presented in Table 1.