

Study selection and screening: strategies and tools

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Agenda

- Short introduction
- Hands-on exercise in break-out groups: selecting studies from titles and abstracts
- ☐ **NRS GH 2021 Study selection Part 1 (Word document)**
- Hands-on exercise in break-out groups: including or excluding studies based on full text publications
- ☐ **NRS GH 2021 Study selection Part 2 (Word document)**
- ☐ **Usman 2011 (pdf document)**
- Discussion and questions

Steps in conducting a SR

1. Formulate the question
2. Define criteria for inclusion- and exclusion
3. Identify (locate) studies
- 4. Select studies**
5. Assess methodological quality of studies (bias)
6. Extract data
7. Analyse data
8. GRADE
9. Present and interpret results

Study selection in the context of systematic knowledge

- Answers a specific question
 - Prevalence
 - Etiology
 - Diagnostics
 - Effect of interventions
 - Prognosis
 - Experiences
- **Is based on all available research corresponding to the question**
- Shows the degree of uncertainty attached to the answer
 - Systematic bias
 - Random error

The findings in a systematic review depend on:

- Decisions about which studies to include
- Which data from the included studies that are analyzed and presented

A typical process for selecting studies

- Compile the search results in a reference manager program (e.g. RefMan, EndNote) and delete duplicates
- Go through titles and abstracts to exclude irrelevant publications (include if there are uncertainties)
- Find/order full text of potentially relevant publications
- Assess full text publications according to inclusion- and exclusion criteria
- Contact authors if there are uncertainties
- Make a definitive decision about inclusion

Implementation of the selection process (1)

- Independent assessment by at least two authors
 - Titles and abstracts
 - Full text publication
- Professional/methodological expertise?
- Disagreement solved by
 - Discussion and consensus
 - A third person decides
 - Contact author if further information is needed

Implementation of the selection process (2)

- Inclusion criteria

- Use check list
- Assess by importance
- First «No» may be used as a reason for exclusion
 - That is, the sequence of inclusion criteria is important in order to save time
- Pilot testing may be used to refine the inclusion criteria
 - The Kappa statistic may be used to assess agreement

Excluded studies

- List the studies that were assessed in full text and give reason for exclusion
 - Important for transparency

Free tools for study selection

Rayyan

(<https://www.rayyan.ai/>)

- Only used for screening
 - Title and abstract
 - Full text
- Only allows for two screeners to work without splitting the file

Cadima

(<https://www.cadima.info/>)

- Works on multiple steps in your systematic review from search to data extraction
- Can work in a team

Licensed tools

Eppi reviewer

(<https://eppi.ioe.ac.uk/CMS/Default.aspx?alias=eppi.ioe.ac.uk/cms/er4&>)

- Multiple machine learning functions
- Searching, de duplication, screening, data extraction, risk of bias
- Can work with multiple team members

Covidence

(<https://www.covidence.org/>)

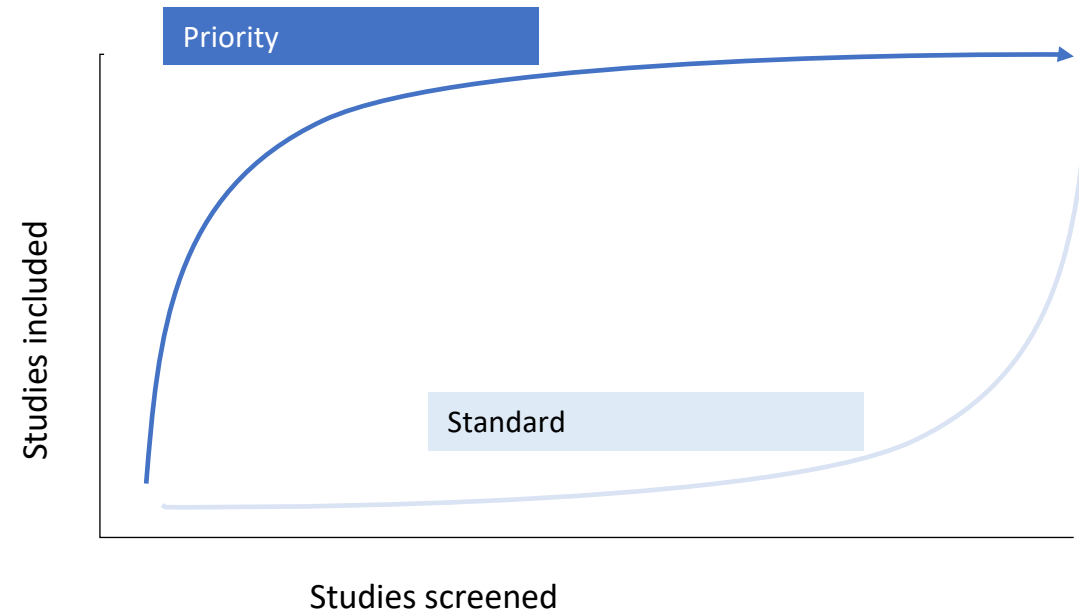
- Multiple SR steps can be done
- Can work as a team
- Speaks with RevMan
- No ML functions

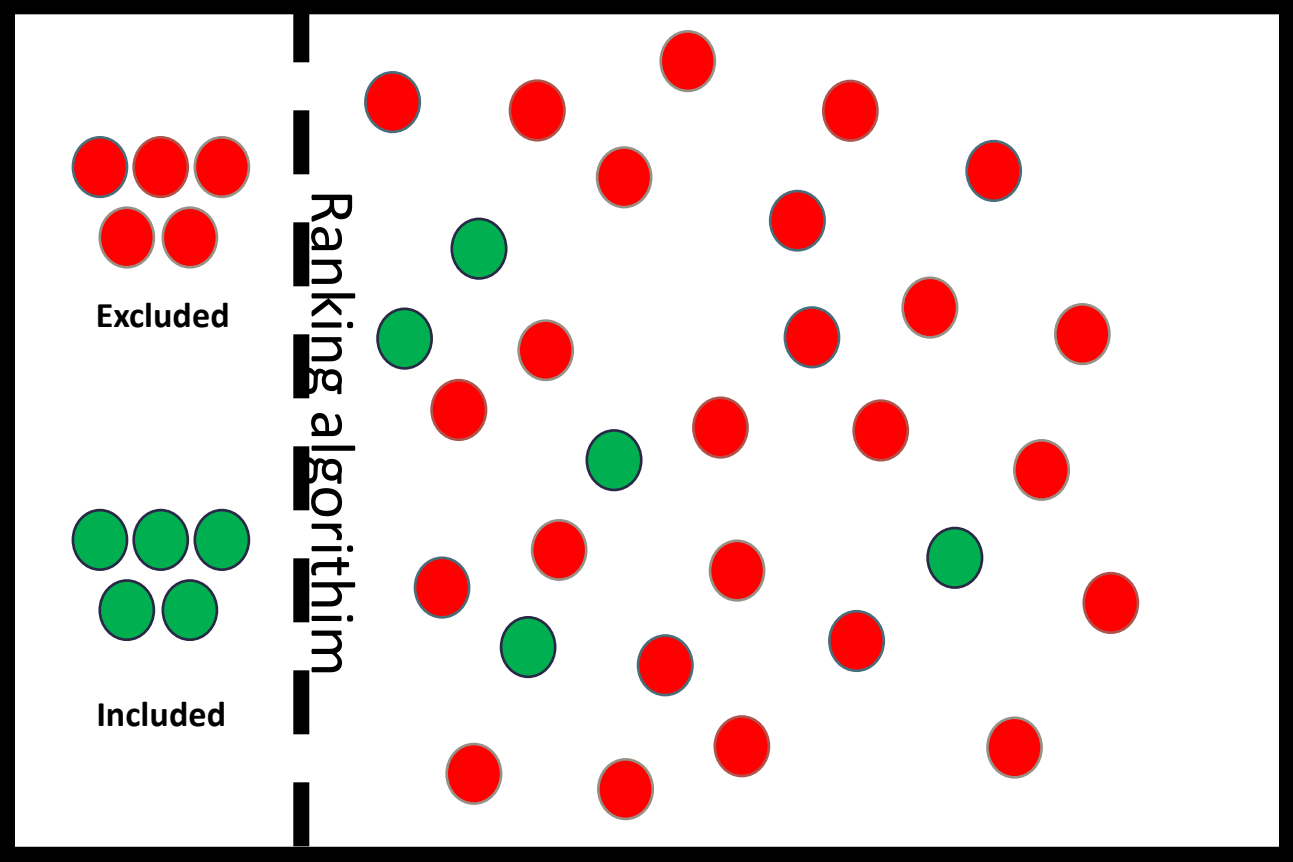
What is a ranking algorithm?

- Uses an algorithm to learn from researcher decisions of include or exclude
- Only changes the order of studies
- Program does not make screening decisions

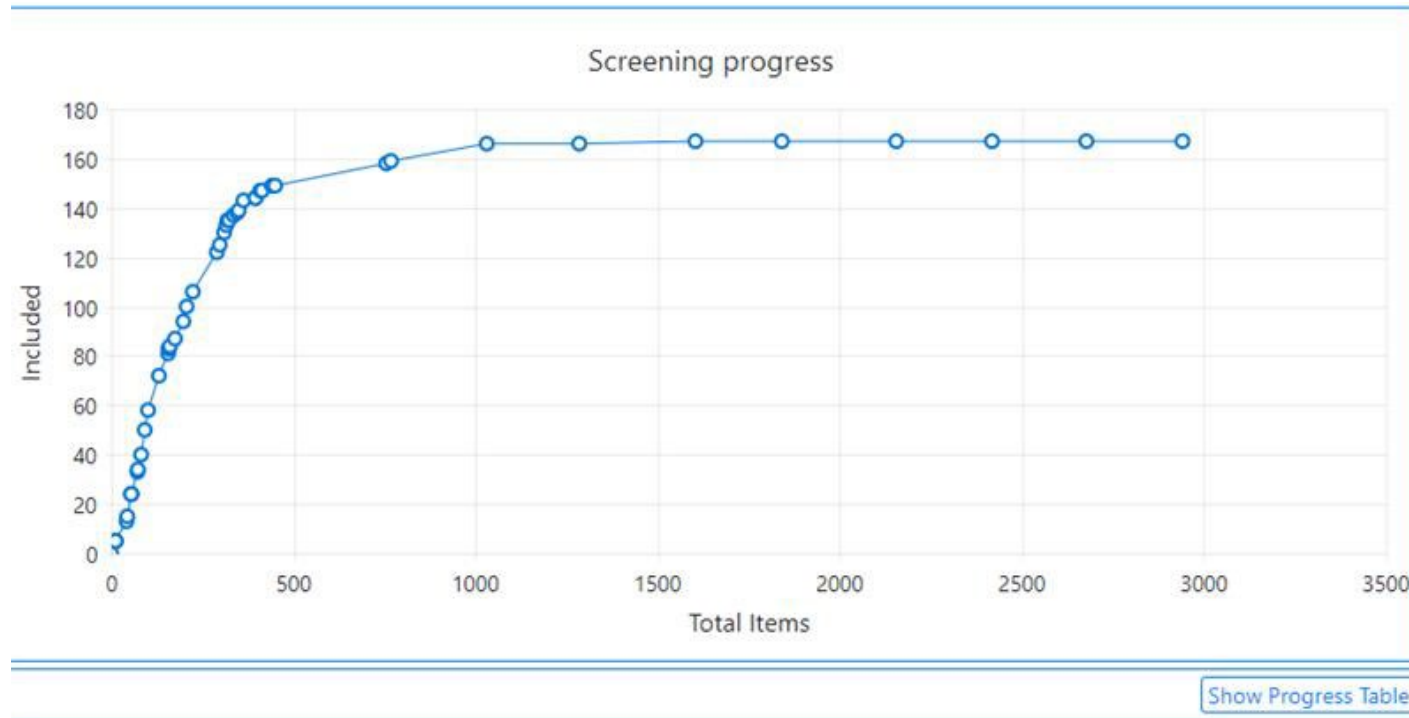


«Standard» vs a ranking algorithm





Finding relevant studies (title/abstract) first



Study selection exercise 1

- Screening of titles and abstracts for relevance
 - Read inclusion criteria and keep at hand
 - Screen list of studies individually
 - Compare and discuss in break-out group
 - Arrive at decisions
- General discussion and questions

Study selection exercise 2

- Assessment of full text publication
 - Read inclusion/exclusion criteria and keep at hand
 - Apply check list to full text publication individually
 - Compare and discuss in break-out group
 - Arrive at a decision
- General discussion and questions