Guidelines for Systematic Reviews

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The *American Journal of Occupational Therapy* (*AJOT*) uses the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines as a basis for systematic reviews. Please refer to http://www.prisma-statement.org/PRISMAStatement/Default.aspx for details on the PRISMA guidelines. The PRISMA checklist is available at http://www.prisma-statement.org/PRISMAStatement/Checklist.aspx.

This document describes requirements for systematic reviews to be published in *AJOT*. Direct questions about these requirements to the appropriate AOTA staff:

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- *Production:* Caroline Polk, cpolk@aota.org.

TITLE

Provide a descriptive title for the systematic review. Identify the report as a systematic review, meta-analysis, or both. (PRISMA Item #1)

ABSTRACT/STRUCTURED SUMMARY

Provide a structured summary including, as applicable, background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; and systematic review registration number (if included). (PRISMA Item #2)

INTRODUCTION

Rationale

Describe the rationale for the review in the context of what is already known. (PRISMA Item #3)

Statement of Problem (formulation of the topic for the systematic review)

- What is the problem addressed by the focused question/topic?
- What significance does addressing this problem have for the following items **(address areas as appropriate):**
  - The clinical and community-based practice of OT
  - The education and training of OT students
  - Refinement, revision, or advancement of knowledge, theory, or research
  - Program development
  - Societal needs
  - Health care delivery and health policy
  - Coverage of payment for occupational therapy services at local, state, and national levels.

Background Literature

Keeping in mind the expectations and standards of a peer-reviewed scholarly journal, critically synthesize the background information and literature for the problem addressed.

- What is currently known about the problem, and what is not yet known?
- Provide relevant definitions and descriptions of the intervention and approach, as needed.
- Discuss how this systematic review will contribute to our understanding or resolution of the problem addressed.

Objectives of the Systematic Review

- Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS), as appropriate. (PRISMA Item #4)
- If the focused question is part of a group of systematic reviews on a topic, state the importance of the focused question relative to the overall topic.

METHOD FOR CONDUCTING THE SYSTEMATIC REVIEW

In this section, describe the following:

- Whether a systematic review protocol exists and if and where it can be accessed (e.g., URL of website). If available, provide registration information, including registration number. (PRISMA Item #5)
- Search strategy, including inclusion and exclusion criteria and screening procedures
  - List who conducted the search (e.g., independent librarian, librarian associated with author's institution).
  - Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale. (PRISMA Item #6)
  - Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated. (PRISMA Item #8)
- Procedures for identification and collection of articles
  - List databases and other information sources used to identify relevant studies (e.g., hand-searching reference lists and tables of contents, contacting content experts). Include dates of coverage of the search. (PRISMA Item #7)
  - State the process for selecting studies (i.e., screening, eligibility, criteria for inclusion in systematic review and, if applicable, criteria for inclusion in the meta-analysis). (PRISMA Item #9)
  - Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators. (PRISMA Item #10)
  - List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made. (PRISMA Item #11)
  - Describe method for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level) and how this information is to be used in any data synthesis (i.e., strength of evidence assessments). (PRISMA Item #12)
  - State the principal summary measures (e.g., risk ratio, difference in means). (PRISMA Item #13).
  - Describe the method of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis. (PRISMA Item #14)

- Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies). (PRISMA Item #15)
- Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.* (PRISMA Item #16)

RESULTS

- Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage. Provide a flow diagram using the format shown in the Flow Diagram on p. 9. (PRISMA Item #17)
- For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations. (PRISMA Item #18)
- Present data on risk of bias of each study and, if available, any outcome level assessment (see item in Method section corresponding to PRISMA Item #12). (PRISMA Item #19)
- For all outcomes considered (benefits or harms), present for each study (1) simple summary data for each intervention group and (2) effect estimates and confidence intervals, using a forest plot as appropriate. (PRISMA Item #20)
- Present the main results of the review. If meta-analyses are done, include for each, confidence intervals and measures of consistency. (PRISMA Item #21)
- Present results of any assessment of risk of bias across studies (see PRISMA Item #15). (PRISMA Item #22). Provide a table summarizing the risk of bias using the format shown in Table Template 1 on p. 7).
- Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see item * in Method section corresponding to PRISMA Item #16). (PRISMA Item #23)

To synthesize the articles and create the results, do the following:

- Organize studies according to themes. Organize and group studies within the themes, rather than report on results of individual studies.
- Synthesize by answering the question, "What do we know, from an evidence-based perspective, about specific dimensions of the focused question?" The synthesis must reflect the strength of the findings in relation to the *types of study design (Level)* and the *methodological weaknesses present (biases and study limitations).* Although there can be study limitations at all levels, please keep in mind that results from a Level I, II, or III study will provide stronger evidence than results from Levels IV or V. Levels of evidence are described in Table 1.
- Include a table summarizing the evidence generated from each study. Use the format shown in Table Template 2, and refer to the guidelines on p. 6.

Table 1. Levels of Evidence	
Level I	Systematic reviews, meta-analyses, randomized controlled trials
Level II	Two groups, nonrandomized studies (e.g., cohort, case-control)
Level III	One group, nonrandomized (e.g., before and after, pretest and posttest)
Level IV	Descriptive studies that include analysis of outcomes (single-subject design, case series)
Level V	Case reports and expert opinion that include narrative literature reviews and consensus statements

Note. Qualitative studies do not include a level of evidence and typically are not included in a systematic review.

From "Evidence-Based Medicine: What It Is and What It Isn't," by D. L. Sackett, W. M. Rosenberg, J. A. Muir Gray, R. B. Haynes, & W. S. Richardson, 1996, *British Medical Journal, 312*, pp. 71–72. Copyright © 1996 by the British Medical Association. Adapted with permission.

- In addition, the evidence within a theme should be described according to the strength of the evidence (level of certainty). The strength of the evidence is based on the guidelines of the U.S. Preventive Services Task Force and is defined as follows:

Table 2. Strength of Evidence (Level of Certainty)	
Strength/ Level of Certainty	**Description**
Strong	• Two or more Level I studies • The available evidence usually includes consistent results from well-designed, well-conducted studies. The findings are strong, and they are unlikely to be strongly called into question by the results of future studies.
Moderate	• At least one Level I high-quality study or multiple moderate-quality studies (Level II, Level III, etc.) • The available evidence is sufficient to determine the effects on health outcomes, but confidence in the estimate is constrained by such factors as • The number, size, or quality of individual studies or • Inconsistency of findings across individual studies. • As more information (other research findings) becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion related to the usefulness of the intervention.
Low	• Small number of low-level studies, flaws in the studies, etc. • The available evidence is insufficient to assess effects on health and other outcomes of relevance to occupational therapy. Evidence is insufficient because of – The limited number or size of studies, – Important flaws in study design or methods, – Inconsistency of findings across individual studies, or – Lack of information on important health outcomes. More information may allow estimation of effects on health and other outcomes of relevance to occupational therapy.

DISCUSSION, LIMITATIONS, AND CONCLUSIONS

- Summarize the main findings, including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., health care providers, educators, clients, and policymakers). (PRISMA #24)
- Discuss limitations at the study, outcome level (e.g., risk of bias), and review level (e.g., incomplete retrieval of identified research, reporting bias). (PRISMA #25)
- Provide a general interpretation of the results in the context of other evidence and implications for future research. (PRISMA #26)

This section is an opportunity for authors to interpret the evidence synthesis (results of the review) and to develop implications for practice, education, or future research. End this section of the article with a response to the following questions:

- Do the findings warrant further research, and are there gaps that need to be filled? If yes, what kind of questions and directions?
- What are the strengths and limitations of the systematic review?
- What principles or fundamental conclusions can be applied to practice, education, and research from the review?
- Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review. (PRISMA #27)

Other

Authors of systematic reviews to be published in AJOT should refer to the *Guidelines for Contributors to AJOT* for additional information.

Guidelines for Developing Evidence Tables

EVIDENCE TABLES

Refer to Table Template 1, next page.

Author, Year

- List the last names of the authors followed by the year of publication (e.g., Gish, Staplin, & Perel, 1999).
- Include the doi after the author names.

Level of Evidence/Study Design/Study Participants/Inclusion Criteria

- List the level of evidence (Level I, Level II, etc.) for the study.
- List the type of study design.
- List the number of study participants. Include percent male and female and the mean age or age range, if included. If the study has more than one group, list the number in each group.
- List the inclusion criteria

Intervention and Control Groups

List only the interventions and control groups relevant to answering the focused question.

Outcome Measures

- List the name of the measure.

Note. Outcomes are the variables or issues of interest to the researcher. They represent the product or results of the intervention or exposure. Many studies include several outcome measures. For the purpose of the Evidence Table, we are only including those measures relevant to answering the focused question.

Results

- List only the results of the study that are appropriate to answering the focused question.
- Indicate whether the results are statistically significant.

RISK-OF-BIAS TABLES

Refer to Table Templates 2 and 3, p. 8.

Author, Year

- List the studies in alphabetical order by first author.
  - If 6 or more authors, list first author and "et al." followed by the date; for example, (Smith et al., 2001).
  - Include the full reference citation in the accompanying manuscript or article.
  - Include the article's doi. See example in Table Template 1.

Table Notes

- Include table notes shown in templates.

Table Template 1. Format for Evidence Tables

Table X. [Title]				
Author/Year	**Level of Evidence/Study Design/ Participants/Inclusion Criteria**	**Intervention and Control Groups**	**Outcome Measures**	**Results**
Green, Brown, Blue, Black, & White (2001) https:/doi.org/…	Level of evidence [Level I, II, etc.] Study design [RCT, systematic review, etc.] *N* = __ [older adults, youth, children]. __% male, __% female *M* age = ___ yr [or mo, or days]. Intervention group, *n* = __. *Inclusion Criteria* [list]	*Intervention* [summarize] *Control* [summarize]	[List measures appropriate to answering the focused question]	[List results of the study appropriate to answering the focused question] [Indicate whether the results are statistically significant.]
Example:				
Girdler, Boldy, Dhaliwal, Crowley, & Packer (2010) https://doi.org/10.1136/bjo.2008.147538 .	Level I RCT *N* = 77 older adults with age-related vision loss (most with AMD) and visual acuity ≤ 6/12. Intervention group, *n* = 36 Control group, *n* = 41 *M* age = 79 yr.	*Intervention* Usual care plus an 8-wk self-management program delivered by occupational therapist and social worker *Control* Usual care	Activity Card Sort at 8 wk and 12 wk postintervention	Intervention group showed statistically significant improvement at posttest and follow-up compared with control group.
Note. [Define abbreviations here; e.g., IADLs = independent activities of daily living; RCT = randomized controlled trial].				

Table Template 1. Risk-of-Bias Table: Non-Systematic Reviews

	Selection Bias		Performance Bias	Detection Bias		Attrition Bias	Reporting Bias
Citation	**Random Sequence Generation**	**Allocation Concealment**	**Blinding of Participants and Personnel**	**Blinding of Outcome Assessment: Self-Reported Outcomes**	**Blinding of Outcome Assessment: Objective Outcomes**	**Incomplete Outcome Data**	**Selective Reporting**
Green, Brown, Blue, Black, & White (2001) https://doi.org/...	?	–	+	+	–	–	+

Note. Categories for risk of bias: + = low risk of bias; ? = unclear risk of bias; − = high risk of bias. NA = not applicable. Risk-of-bias table format adapted from "Assessing risk of bias in included studies," by J. P. T. Higgins, D. G. Altman, and J. A. C. Sterne, in *Cochrane Handbook for Systematic Reviews of Interventions* (Version 5.1.0), by J. P. T. Higgins and S. Green (Eds.), March 2011. Retrieved from http://www.cochrane-handbook.org. Copyright © 2011 by The Cochrane Collaboration.

Table Template 2: Risk-of-Bias Table: Systematic Reviews (AMSTAR)

Citation	**"a priori design" included? [1]**	**Duplicate study selection/ data extraction? [2]**	**Compre-hensive literature search performed? [3]**	**Status of publication as inclusion criteria? [4]**	**List of included/ excluded studies provided? [5]**	**Characteristics of included studies provided? [6]**	**Quality of studies assessed and documented? [7]**	**Quality assessment used appro-priately? [8]**	**Methods used to combine results appropriate? [9]**	**Likelihood of publication bias assessed? [10]**	**Conflict of interest stated? [11]**
Lauche, Cramer, Dobos, Langhorst, & Schmidt (2013) https://doi.org/10.1016/j.jpsychores.2013.10.010	+	–	+	+	+	+	+	+	+	–	–

Note. Categories for risk of bias: + = low risk of bias; ? = unclear risk of bias; − = high risk of bias. NA = not applicable. Risk-of-bias table format adapted from Shea, B. J., Grimshaw, J. M., Wells, G. A., Boers, M., Andersson, N., Hamel, C., … Bouter, L. M. (2007). Development of AMSTAR: A measurement tool to assess the methodological quality of systematic reviews. *BMC Medical Research Methodology, 7*, 10. http://dx.doi.org/10.1186/1471-2288-7-10

Editorial Guidelines for Evidence Tables

Systematic reviews and related tables will be edited to conform to the format described in this document. Refer to the table templates on the previous page for guidance. Authors should not deviate from the format. Adherence to the prescribed format will save time in production, avoid rewrites, and result in a higher quality product.

Important: The format of systematic review and evidence tables changed in 2014. Previously published evidence tables and systematic reviews are NOT a guideline for format and style. Please consult AOTA staff with any questions concerning format and style.

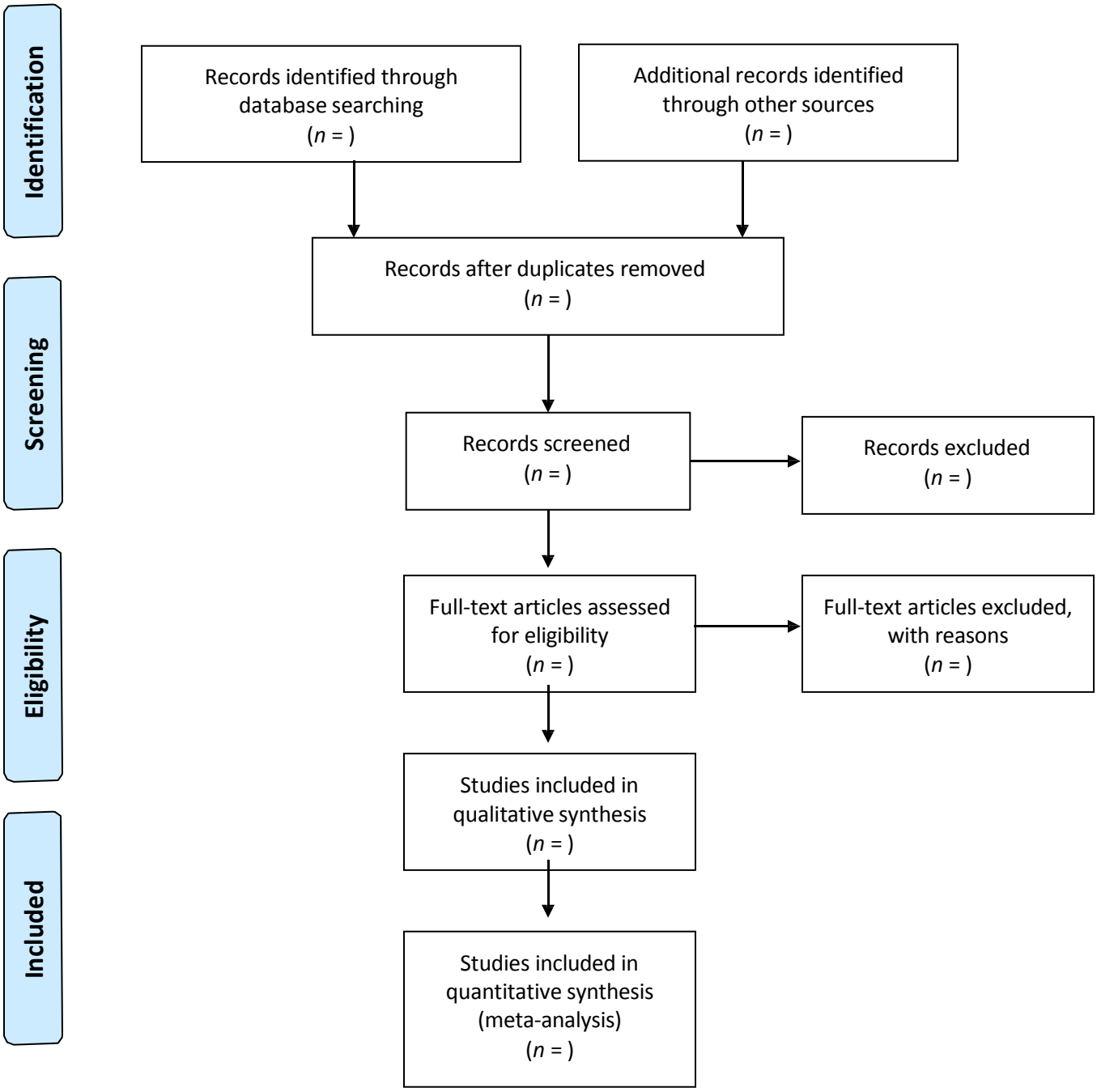
Different studies have different levels of complexity (e.g., multiple interventions or control groups), and study descriptions may vary slightly and require additional information for clarity. Brevity is key: The goal is to provide only essential information for the reader. Dois are included so that readers can easily obtain more information on a given study.

Evidence tables should be consistent in content and style. General formatting guidelines are as follows:

- List the studies in alphabetical order by first author.
  - If 6 or more authors, list first author and "et al." followed by the date; for example, (Smith et al., 2001).
  - Include the full reference citation in the accompanying manuscript or article.
  - Include the article's doi. See example in Table Template 1.
- In the reference list, place a * next to each study included in the systematic review.
- Abbreviate names of assessments and programs when they are commonly known by an abbreviation or acronym (e.g., AMPS, SF–36). All abbreviations should be defined in the table notes.
- There is no need to provide references for assessments listed as outcome measures in evidence tables. If an assessment is discussed in the article that accompanies the table, a reference for that assessment should be provided in the article's reference list.
- All text in a given table column should have a consistent structure (e.g., bulleted lists, phrases).
- Separate phrases and sentences with a line space (see above sample).
- Use bullets when there are multiple items in a list.
- Use Roman numerals for levels of evidence (Level I, Level III, etc.).
- Use <, >, ≤, ≥, /wk, /yr, and other common abbreviations.

Flow Diagram

Authors should include boxes below, as appropriate.



From "Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement," by D. Moher, A. Liberati, J. Tetzlaff, D. G. Altman; The PRISMA Group, 2009, *PLoS Med* 6(6): e1000097. http://dx.doi.org/10.1371/journal.pmed1000097