What is meant by “synthesize” in the context of writing a review article
(Compiled and edited by HNM on 3/14/206) with the aid of ChatGPT)

In the context of a review article, "synthesize" means combining and integrating findings from multiple studies to create a coherent understanding of a topic. Rather than simply listing or summarizing individual papers, the author analyzes relationships among them and draws broader conclusions.

Key elements of synthesis in a review article

- *Integration of evidence:* Bringing together results from different studies.
- *Compare & contrast*: agreements, disagreements, and patterns across studies.
- *Interpretation*: Explaining what the combined findings mean for the field.
- *Conceptual organization*: Structure literature into themes, mechanisms, or models.
- *New insight:* Producing a clearer overall perspective or theoretical framework.

Example summary: “Study A found X. Study B found Y. Study C found Z.”
Example synthesis: “Taken together, Studies A–C suggest that X occurs primarily under conditions Y, implying a common mechanism involving Z.”

When peer reviewers look for a synthesis of the literature,” they are usually looking for more than just a list of studies. They expect the review to interpret and integrate the body of research, so the reader learns something new about the field.

In short, synthesizing in a review article means integrating multiple studies into a unified interpretation that advances understanding of the topic.

Generally, things most reviewers are looking for relate to

Organization of the literature into useful and relevant themes

Instead of describing papers one by one, group studies into conceptual categories. This helps readers understand how the field is structured. For example:

- Mechanisms
- Clinical outcomes
- Methodological differences
- Population differences

Identification of patterns
A good synthesis highlights consistent findings across studies and their significance.

- Several studies showing similar physiological effects
- Converging evidence from different experimental approaches
- Agreement between clinical and laboratory research

Explanation of conflicting results

Many studies disagree. Reviewers expect the author to analyze why. Possible explanations:

- Different study populations
- Measurement methods
- Sample sizes
- Experimental conditions

A synthesis helps clarify which results are more reliable and why.

Development of a conceptual model

Strong review papers often propose a framework or mechanism that connects the findings. Examples of this may include:

- A physiological pathway
- A disease progression model
- A theoretical explanation linking results

This is how a review contributes to understanding, though it does not present new data.

Identification of gaps in knowledge

A synthesis should also show what remains unknown. Examples might include:

- Lack of long-term studies
- Missing data in certain populations
- Unresolved mechanisms

This helps to guide future research directions.

A simple illustration

Poor review (summary):

- Study A found X
- Study B found Y
- Study C found Z

Good review (synthesis):

- Studies A–C collectively suggest that X occurs under conditions Y, likely mediated by mechanism Z, although results vary in elderly populations due to methodological differences.

When reviewers look for synthesis, they want the author to integrate the literature, interpret it, explain relationships among studies, and produce a coherent understanding of the topic.