

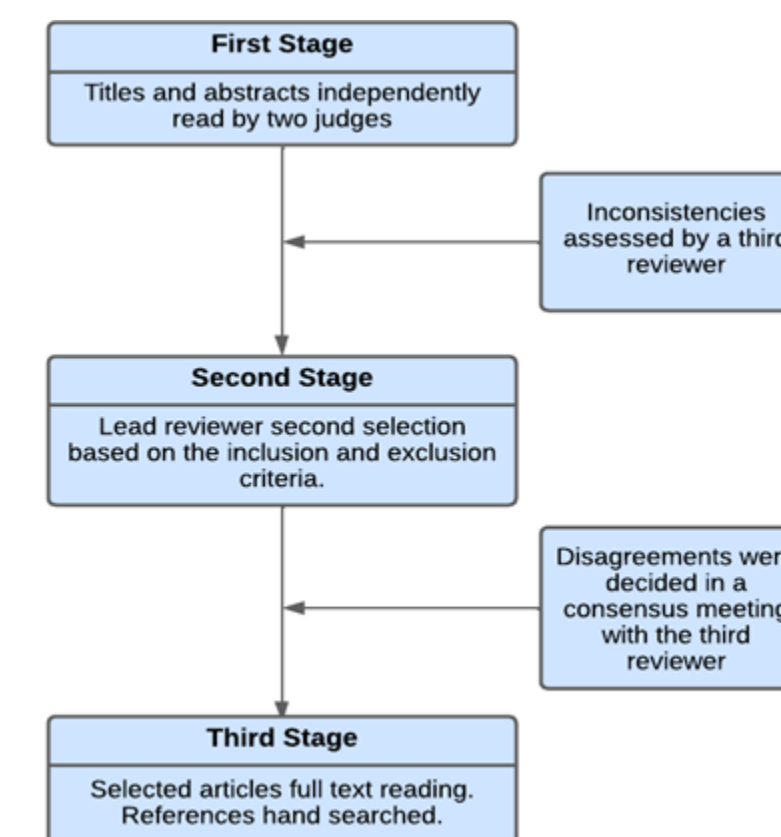
## Abstract

Auditory training for tinnitus patients has been studied as an auditory rehabilitation strategy but there is no consensus about the best practice methodology and a need for high-level scientific evidence in this area. Our study aimed to verify the evidence of auditory training in the audiological treatment of tinnitus in adults and older adults. Search was performed and the level of evidence of the studies was classified. 15 articles were found, and their data were extracted. Frequency discrimination training was the most studied strategy, followed by auditory attentional skills training and multisensory training. Auditory discrimination training and attentional auditory skill stimulation studies obtained quality evidence levels ranging from limited to high (C-A) and the studies that applied multisensory training or attentional training combined with other strategies reached a high-quality evidence level (A). Recent studies had higher levels of evidence and considered attentional factors and multisensory pathways in auditory training strategies.

Figure 1. Eligibility criteria.

<b>Types of participants:</b> adults and older adults with tinnitus (older than 18 years);
<b>Types of study:</b> experimental, quasi-experimental, or observational studies (cross-over studies, ecological studies, longitudinal studies, randomized and non-randomized clinical trials, before-and-after studies, case-control studies, cohort studies, and case series), reviews, and systematic reviews;
<b>Language:</b> English, Portuguese, and Spanish;
<b>Date limit:</b> No publication date limit was set to retrieve articles.

Figure 2. The three-stage process of the study



## Objectifs

This scoping review aims to update auditory training evidence and expand knowledge on auditory training strategies for tinnitus patients.

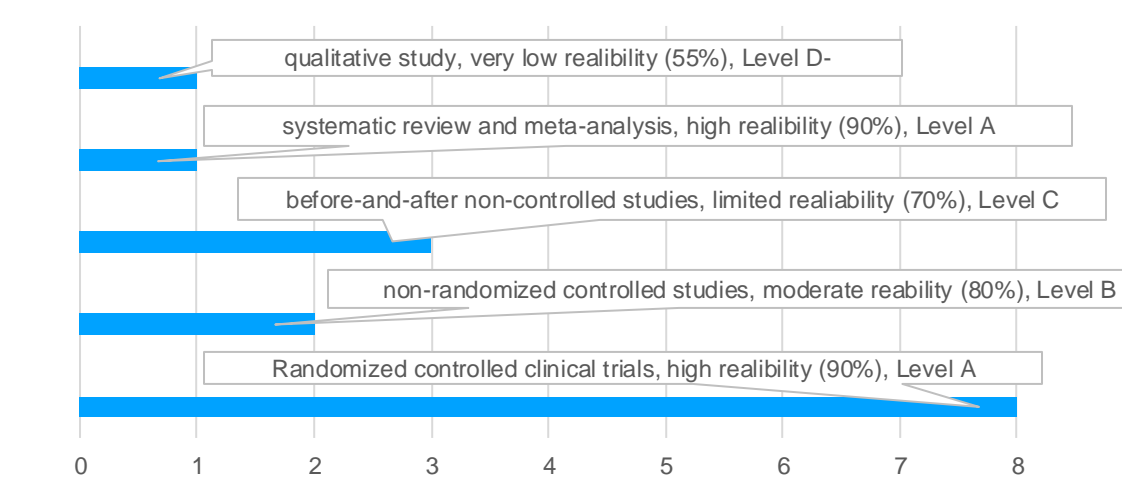
## Méthodes et Matériels

Scoping review based on a search for articles in journals available in MEDLINE (PubMed), Embase (Elsevier), LILACS (BVS), and Cochrane Library databases. Titles and abstracts of the retrieved articles using Rayyan QCRI were assessed by peers, following the eligibility criteria (Figure 1). The three-stage process of the study is described at Figure 2. Results were described and summarized according to the objectives of this review and qualitatively assessed based on the Critically Appraised Topics (CAT)<sup>1</sup>. Studies' level of evidence was classified into very high (Level A+), high (Level A), moderate (Level B), limited (Level C), low (Level D), or very low (Level D-).

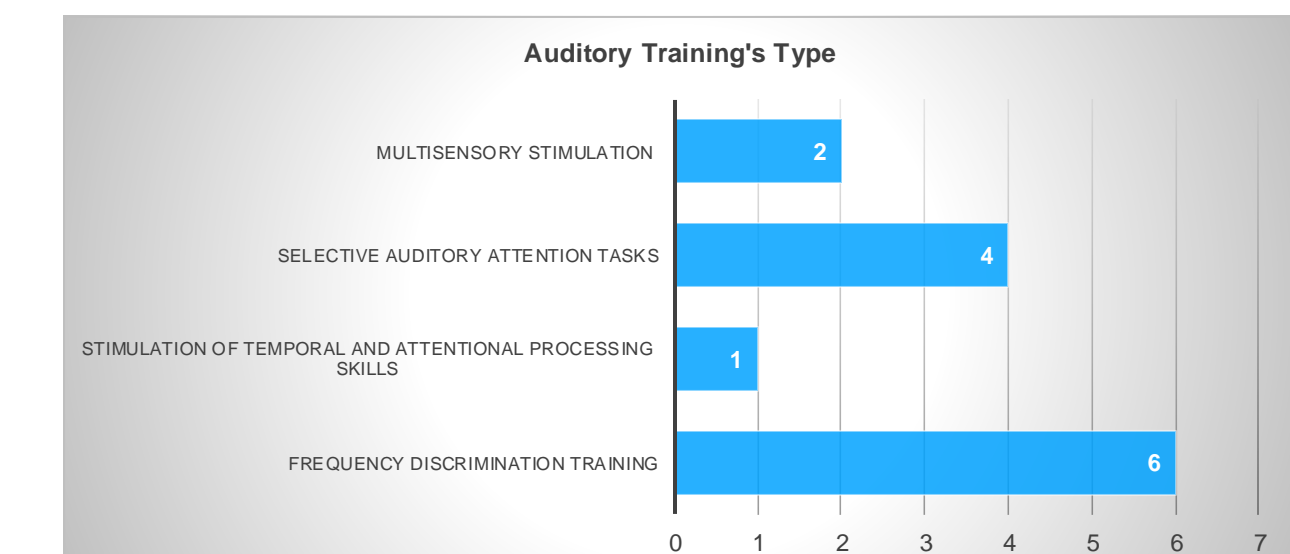
## Résultats

2,160 articles were identified, 189 duplicates were excluded, leaving 1,971 articles, which titles and abstracts were read. 1,956 articles were excluded (did not meet the eligibility criteria), resulting in 15 selected papers. These articles were read in full, and three of them were excluded for not meeting the eligibility criteria, resulting in 12 articles which were included in this review. References were hand-searched, and three additional articles were found that met the eligibility criteria, totaling 15 articles. Main results are presented below.

Studies' Design, Reliability, Level of Evidence (CAT)



Auditory Training's Type



New studies focused on the topic<sup>2-9</sup> after a previously published systematic review<sup>10</sup>. Quality of evidence improved: most of the studies were randomized controlled trials<sup>3,4,8,9</sup>, high-quality evidence level (A). Recent procedures ranged from frequency discrimination training (n=2)<sup>2,8</sup>, auditory training tasks to stimulate the temporal and attentional processing skills (n=1)<sup>6</sup>, stimulation of isolated selective auditory attention (n=1)<sup>7</sup> or associated with sound localization tasks (n=2)<sup>5,9</sup>, to multisensory stimulation through auditory, tactile, and visual stimuli (n=2)<sup>3,4</sup>.

## Conclusion

Recent studies regarding auditory training in tinnitus subjects had high levels of evidence and included attentional and multisensory stimulation in auditory training strategies. There were different methodologies and outcome measures, hindering the comparison of results and clinical applicability. Further large-scale research is necessary, using adapted strategies directed to the topic, considering current scientific knowledge.

## Références

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