

# Interprofessional Training for Tinnitus

## Researchers and Clinicians

Utilizing Co-Creative principles to develop an eLearning platform for Tinnitus

### Evaluation of Project Outcomes



#### Project Partners:

- University of Cyprus (Coordinator)
- Aristotle University of Thessaloniki
- Jena University Hospital
- Institute of Communication and Computer Systems
- Charité – Universitätsmedizin Berlin
- CYENS Centre of Excellence



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## **Introduction:**

### **Project Overview**

The Erasmus+ project Tin-TRAC (Interprofessional Training for Tinnitus Researchers and Clinicians) focuses on enhancing the assessment and management of Tinnitus by promoting interdisciplinary collaboration and creating educational materials and tools. Tinnitus is the perception of noise in the absence of an external source. It affects about 10-30% of European citizens and the healthcare cost is between €500 and €1500 per patient.

Tinnitus management is challenging because of its diverse symptoms and the need for personalized treatment. Healthcare professionals, researchers, and patient advocates of different professions across Europe collaborate to provide individualised diagnostic and therapeutic services. Building on this multidisciplinary approach, Tin-TRAC seeks to strengthen cooperation among stakeholders by developing a unified framework for education and training.

The project's main goal is to create a standardized, multidisciplinary curriculum and an EU-wide E-learning platform for Tinnitus assessment and treatment. The E-learning platform will serve as a resource hub for healthcare professionals, clinicians and researchers across the EU, enhancing Tinnitus assessment and management in clinical and research contexts.

Apart from the collaboration between sectors, Tin-TRAC also aims to identify and promote best practices by training future trainers and healthcare professionals to create a lasting impact on Tinnitus management. The outcomes of Tin-TRAC are expected to provide significant benefits to a wide range of stakeholders, including clinicians, researchers, educators and patients.

# Evaluation of Project Outcomes

This report presents an evaluation of the key outcomes of the Erasmus+ project Tin-TRAC. The assessment is structured into five main sections, each addressing a crucial aspect of the project's development and implementation.

This section outlines the key areas assessed in the project evaluation:

## **Section 1: Needs Analysis**

Evaluating the identification of training gaps, target group relevance, and impact on curriculum and RLO development.

## **Section 2: Curriculum Development**

Assessing quality, relevance, accessibility, and potential for integration into various educational contexts.

## **Section 3: Reusable Learning Objects (RLOs) Development**

Examining usefulness, accessibility, sustainability, and integration into teaching practices.

## **Section 4: E-Learning Platform Development**

Reviewing usability, functionality, accessibility, and technical performance of the e-learning platform.

## **Section 5: Dissemination**

Measuring the effectiveness of outreach, audience reach, and strategies for improvement.

## Section 1 - Needs Analysis

All 7 of the respondents have confirmed that they have reviewed the needs analysis created, demonstrating strong engagement with the document. When asked whether the needs analysis sufficiently addressed all critical topics related to Tinnitus training the ratings ranged from 3 to 5, with an average score of 4.14 (1 = Not at All, 5 = Completely) showing that the analysis covered most essential topics and suggesting high satisfaction with the content included. Regarding the target group relevance as assessed by the question "Were the regions and target groups addressed in the needs analysis appropriate for the project's scope?" the responses varied, with some respondents rating it as a 3 and others as a 5, yielding an average score of 4.14 (1 = Not Appropriate, 5 = Very Appropriate). The recommendations for improvement focused on the inclusion of more researchers from Greece and Cyprus as well as occupational groups that are exposed to loud sounds.

All the respondents stated that there were not any topics missing or not adequately covered in the needs analysis. Also, regarding the relevance of the Needs Analysis in informing the development of the curriculum and RLOs, 3 respondents rated it as 5 and 4 respondents rated it as 4 (1 = Not Relevant, 5 = Highly Relevant). These ratings indicate a strong belief in the relevance of the needs analysis to the development process. The suggestions for improvement included the incorporation of training topics specific to each profession, the expansion of the geographical scope to include a broader range of European countries, gathering more information on preferred learning style or methods and increasing the sample size to ensure more comprehensive data.

Furthermore, concerning the needs analysis, a scientific paper has been published emphasizing the significance of the needs analysis which incorporates perspectives from clinicians, researchers, and tinnitus patients. The needs analysis was based on web-based surveys with tinnitus patients, clinicians, and researchers providing critical insights in tinnitus healthcare across Germany, Cyprus, and Greece (Steinmetzger et al., 2024). The needs analysis highlighted the disparity in the diagnostic and treatment approaches between the three countries as well as the fact that patients' treatment satisfaction was lower than that of the clinicians and researchers. Additionally, it was shown that both patients and clinicians were interested in learning more about tinnitus-related topics and treatment strategies. These findings provided a strong foundation for the Tin-TRAC project by addressing diagnostic, treatment, and educational needs for improvement in tinnitus care.

## Section 2 - Curriculum Development

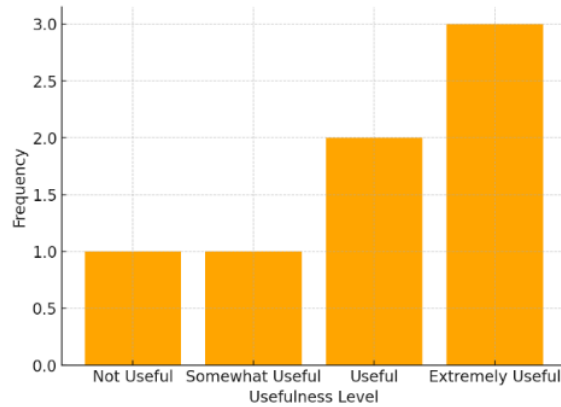
The quality of the curriculum content received ratings that ranged from 3 to 5, with an average score of 4.29 (1 = Very Poor, 5 = Excellent) in the question "How would you rate the quality of the curriculum content?", indicating high satisfaction. In the question "Was the curriculum relevant to your professional or educational needs?", all the respondents stated that the curriculum was relevant to their needs. Also, their replies in the question "How well does the curriculum address the needs identified during the initial analysis?" showed that the curriculum addressed the needs identified in the initial analysis fairly well with an average rating of 3.8 (1 = Not at All, 5 = Very Well). Moreover, the curriculum content was described as easy to access and understand by all of the respondents. Specifically, as a respond to "Which aspects of the curriculum did you find most valuable?" it was noted that the most valuable aspects of the curriculum were psychological interventions, Physiology, Tinnitus-specific audiometry, and Treatment. Similarly, the objective of unifying Tinnitus diagnosis and treatment across Europe through an accessible educational platform as well as the development of a course that leads to a certification were also mentioned as particularly valuable aspects of the curriculum. Suggestions for improvement included adding first-level research results, simplifying language, and ensuring more accurate translations, particularly for the German version.

Concerning sustainability, 6 out of 7 respondents believe that the curriculum could be reused in other training settings. These include integrating the curriculum into audiology-related materials, psychoacoustics, incorporating it into medical and psychotherapist training, offering it as a university course, utilizing it in neuroscience education and including it in health and safety programs.

## Section 3 - Reusable Learning Objects (RLOs) Development

With an average rating of 3.8 (1 = Not Useful, 5 = Extremely Useful) the respondents' ratings indicate the belief that the RLOs were beneficial for the training requirements (Figure 1).

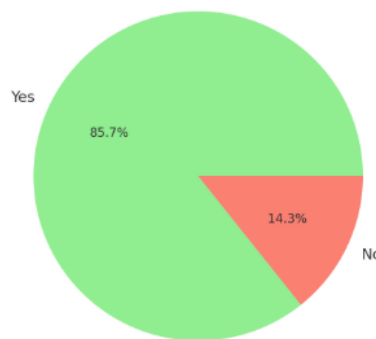
Figure 1: Usefulness of RLOs for the Training



However, some respondents faced challenges in incorporating them into their teaching practices. The challenges involved the lack of experience in using E-learning platforms and restricted application of the platform use in teaching settings. The RLOs on Tinnitus diagnosis, treatments, and comorbidity, as well as current research trends were regarded as the most useful with 6 out of 7 respondents stating that they would recommend them to their colleagues. The suggestions for improvement included avoiding stock photos, adding more videos to increase engagement and making the diagnosis RLOs more interactive. Furthermore, 6 out of 7 respondents stated that the RLOs were easily accessible and usable within the platform, indicating a positive user experience.

Regarding the sustainability of RLOs, 4 out of 7 respondents reported that RLOs can also be reused for other purposes including the domain of Audiology, Hearing acoustics, training material for ENT doctors and Psychologists, as well as educational science professionals. Moreover, good potential for future collaborations was shown by the fact that 6 out of the 7 respondents are interest in working together to modify or expand the material created (e.g., to create research initiatives and broad the scope of the current material) (Figure 2).

Figure 2: Interest in Collaborating to Expand or Adapt Materials



## Section 4 - E-Learning Platform Development

The average rating for the accessibility and user-friendliness of the E-learning was 3.8 (1 = Very Difficult, 5 = Very Easy), exhibiting a positive user experience. Concerning the platform's navigation, 5 of the 7 respondents agreed that there were adequate navigation instructions for using the platform and its features. Likewise, although the platform was rated as convenient, as evidenced by the average score of 3.14 there is still room for improvement (1 - Very difficult, 5 - Very intuitive).

Concerning the visual appeal and engagement levels of the platform, with an average score around 3.7 they were of adequate quality. Moreover, regarding the platform's functionality, 6 out of 7 respondents reported that all features of the platform were functional. However, one respondent reported some minor technical issues, including system crashes and navigation challenges as well as some accessibility issues (e.g., access to the certified curriculum). Despite these, the overall responsiveness of the platform was highly rated, with most respondents giving ratings between 4 and 5, resulting in an average rating of 4.29 (1 = Very Poor, 5 = Excellent). Similarly, regarding the functionality of the platform, 6 out of 7 respondents stated that they did not encounter any technical issues while using it. Some of the features that stand out according to the respondents are A) The quizzes, B) The content, C) The courses' overview and D) The structure of material. The suggestions for improvement included simplification of the workflow, refining the user interface (e.g., correcting small flaws such as typos and alignment issues), simplifying the enrolment process, reducing the number of clicks needed to access RLOs and enhancing the overall UI design.

Overall, all the respondents expressed a willingness to recommend the platform to a variety of stakeholders including colleagues, healthcare professionals, institutions, researchers and students, highlighting its usefulness in educational settings.

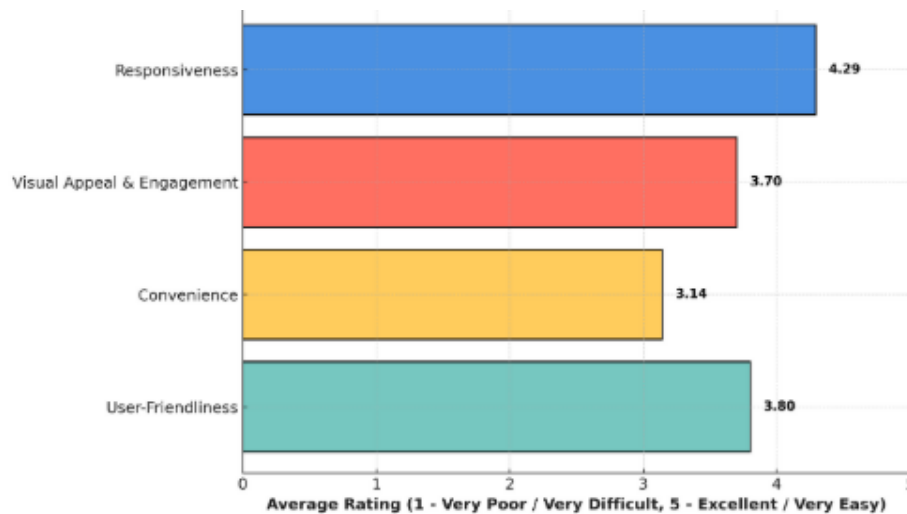
Despite the high satisfaction scores regarding the development of the e-learning platform, the System Usability Scale (SUS) was also employed as part of the evaluation process. SUS comprises 10 questions that are rated on a 5-point Likert scale, ranging from 1 - Strongly Disagree to 5 - Strongly Agree (Table 1). It was used to evaluate the platform's usability and user experience in a structured way. SUS has been developed by John Brooke in 1986 as a way of measuring and evaluating the usability of computer systems, however, it became the golden standard in evaluating usability across various types of technologies (e.g., websites, mobile apps, hardware and operating systems) (Brooke et al., 2013; Sauro & Lewis, 2009). The design of usable e-learning platforms is crucial for their effectiveness and the promotion of learning (Abuhlfaia & Quincey, 2019). However, designing user-



friendly platforms continues to be a challenge for developers and designers (Abuhlfaia & Quincey, 2019).

SUS was chosen for its widespread used, validity and reliability as an assessment tool (Harrati et al., 2016; Sauro & Lewis, 2011; Supriyadi et al., 2020). Furthermore, it is easy to use and analyse (Brooke et al., 2013). Another reason for using SUS is because it is robust in providing reliable results even with small sample sizes (Brooke et al., 2013; Sauro, 2011). Lastly, using SUS will enable meaningful comparison of our scores with normative standards (Brooke et al., 2013) of other systems and products. Based on the responses received from 19 users, the project's e-learning platform was rated with 71.5/100. According to Brooke et al. (2013) this total score indicates a generally acceptable/good level of usability and user experience, suggesting that users found the platform relatively easy to use, with room for further improvement.

Figure 3: E-learning Platform Evaluation



## Section 5 - Dissemination

The overall dissemination efforts were regarded as effective, with respondents reporting participation in a total of 26 presentations/workshops to promote the project. 4 out of 7 respondents stated that they have contributed to at least one publication related to the project. The most effective dissemination methods identified by respondents included research publications, conferences and talks, multiplier events, university communication channels and oral presentations. Some of the challenges faced during the dissemination process as indicated by the question "What challenges did you face in dissemination?" included: Attracting participants for the multiplier events, reaching individuals without internet access (such as older patients), accessing researchers and

clinicians in Greece and Cyprus, as well as issues related to budget and time constraints.

Regarding the audience reach, around half of the respondents believe that the dissemination efforts reached the intended audience while the rest of them expressed some concerns. Some suggestions to improve the reach of audience was to open the dissemination efforts more widely, to present the project at conferences and to focus on reaching a broader audience. For the improvement of the dissemination reach and visibility in the future respondents recommend strategies such as presenting at conferences, mentioning the project in every author presentation and targeting clinics and research groups as part of the dissemination process. Furthermore, they also referred the offer of a certified university course, creating engaging and shareable content (such as infographics, videos, and blog posts), hosting online events for both professionals and patients, utilizing professional marketing strategies and effective use of social media channels. Additionally, dissemination channels such as patient forums, Tinnitus-specific organizations, healthcare networks, self-help groups and academic research networks were also suggested in the future to extend outreach.

Concerning platform analytics about registrations, currently the platform has 40 registered unique users, distributed in the different courses offered as follows: 18 registered in the course patients, 18 in the course Research (open) and 6 in the Research (certified). Please note that 2 of the users in the course Research (certified) have also registered in Research (open). The users assessed the platform mainly from Cyprus (19 users) but also from Germany, and Greece.

## References

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## Appendix 1

Table 1: System Usability Scale (SUS) Statement Item

Q1	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I think that I would like to use this e-platform frequently.]
Q2	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I found this e-platform unnecessarily complex.]
Q3	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I thought this e-platform was easy to use.]
Q4	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I think that I would need assistance to be able to use this e-platform.]
Q5	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I found the various functions in this e-platform were well integrated.]
Q6	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I thought there was too much inconsistency in this e-platform.]
Q7	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I would imagine that most people would learn to use this e-platform very quickly.]
Q8	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I found this e-platform very cumbersome/awkward to use.]
Q9	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I felt very confident using this e-platform.]
Q10	Instructions: For each of the following statements, mark one box that best describes your reactions to the e-platform today. [I needed to learn a lot of things before I could get going with this e-platform.]

## Table 2: Evaluation form used

### Tin-TRAC Feedback and Project Result evaluation survey:

Please use the following form to evaluate the Needs Analysis, the curriculum, the reusable learning objects (RLOs), and their sustainability.

#### Section 1: Needs Analysis

1. Have you read the published needs analysis? ⋮

Yes

No

2. If no, please explain why

3. Do you think the needs analysis sufficiently covers all critical topics related to tinnitus training? (1 = Not at All, 5 = Completely)

1	2	3	4	5
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4. Were the regions and target groups addressed in the needs analysis appropriate for the project's scope? (1 = Not Appropriate, 5 = Very Appropriate)

1	2	3	4	5
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5. If not, which regions or target groups should have been included?

6. Are there any topics you feel were missing or not covered adequately in the needs analysis?

Yes

No

7. If yes, please specify

8. Based on your experience, how relevant do you find the needs analysis in informing the development of the curriculum and RLOs? (1 = Not Relevant, 5 = Highly Relevant)

1	2	3	4	5
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9. How would you suggest improving or updating the needs analysis for future iterations?

**Section 2: Curriculum Feedback**

10. How would you rate the quality of the curriculum content? (1 = Very Poor, 5 = Excellent)

1	2	3	4	5
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11. Was the curriculum relevant to your professional or educational needs?

- Yes
- No
- Not Applicable

12. If no, please specify why.

13. How well does the curriculum address the needs identified during the initial analysis? (1 = Not at All, 5 = Very Well)

1	2	3	4	5
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14. Which aspects of the curriculum did you find most valuable?

15. What improvements would you suggest for the curriculum?

**Section 3: RLO Feedback**

16. How useful were the reusable learning objects for your training needs? (1 = Not Useful, 5 = Extremely Useful)

1	2	3	4	5
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17. Were the RLOs easy to integrate into your workflow or teaching?

Yes

No

18. If no, what were the barriers?

19. Which RLOs did you find most useful?

20. Would you recommend the RLOs to colleagues?

Yes

No

21. What improvements would you suggest for the RLOs?

**Section 4: Sustainability**

22. Do you think the curriculum could be reused in other training settings?

Yes

No

23. If yes, in what types of settings?

24. Do you think the RLOs could be reused for other purposes?

Yes

No

25. If yes, please describe.

26. Would you be interested in collaborating to expand or adapt these materials?

Yes

No



27. If yes, how would you envision such collaboration?

## Part 2: E-Learning Platform Usability Survey

### Section 1: General Feedback

28. How easy was it to register and access the e-learning platform? (1 = Very Difficult, 5 = Very Easy)

1	2	3	4	5
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29. How intuitive was the navigation within the platform? (1 = Very Difficult, 5 = Very Intuitive)

1	2	3	4	5
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30. How visually appealing was the platform? (1 = Not Appealing, 5 = Very Appealing)

1	2	3	4	5
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31. How engaging was the content on the platform? (1 = Not Engaging, 5 = Very Engaging)

1	2	3	4	5
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### Section 2: Functionality

32. Were all features of the platform functional during your usage?

Yes

No

33. If no, which features did not work as expected?

34. How would you rate the responsiveness of the platform (e.g., loading times, accessibility)? (1 = Very Poor, 5 = Excellent)

1	2	3	4	5
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35. Did you encounter any technical issues?

Yes

No

36. If yes, please describe

**Section 3: Content Accessibility**

37. Was the curriculum content easy to access and understand?

Yes

No

38. Were the RLOs easy to locate and use within the platform?

Yes

No

39. Did the platform provide adequate instructions for navigating and using its features?

Yes

No

**Section 4: User Experience**

40. What did you like most about the platform?

41. What improvements would you suggest?

42. Would you recommend the platform to others?

Yes

No

43. If yes, to whom?

### Part 3: Dissemination and Reach Feedback Survey

#### Section 1: Dissemination Activities

44. How many presentations or workshops have you participated in to promote the project?

45. Have you contributed to any publications related to the project?

Yes

No

46. If yes, please list the publications

47. What dissemination methods did you find most effective?

48. What challenges did you face in dissemination?

#### Section 2: Reach

49. How many users have registered on the platform?

50. From which regions/countries have users accessed the platform?

51. Do you feel the dissemination efforts have reached the intended audience?

Yes

No

52. If no, what could be improved?

### Section 3: Future Recommendations

53. What strategies would you recommend for improving dissemination and reach in the future?

54. Are there additional channels or networks we should consider for dissemination?

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