

SupplementaryFile1:StudyQuestionnaire

Questionnaire: Educational Impact of Patient-Specific 3D-Printed Anatomical Models in Orthopedic Residency Training

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Instructions: Please answer all questions honestly. Your responses will remain confidential. For each question, circle a number or check the appropriate box, and provide open comments where indicated.

Section 1: Participant Information

1. Training year: _____ (e.g., 1st / 2nd / 3rd)
2. Age: _____
3. Gender: ☐ Male ☐ Female ☐ Other
4. Subspecialty interest (if any): _____

Section 2: Educational Value Assessment

Please rate the effectiveness of 3D-printed anatomical models in the following aspects (1 = not effective, 10 = highly effective). Circle one number for each row.

5. Improving understanding of anatomical structures
1 2 3 4 5 6 7 8 9 10
6. Enhancing comprehension of spatial relationships
1 2 3 4 5 6 7 8 9 10
7. Understanding pathological changes (e.g., fracture patterns)
1 2 3 4 5 6 7 8 9 10
8. Facilitating understanding of surgical approaches
1 2 3 4 5 6 7 8 9 10
9. Contribution to preoperative planning
1 2 3 4 5 6 7 8 9 10
10. Case-based learning improvement
1 2 3 4 5 6 7 8 9 10
11. Physical/tactile manipulation's educational value
1 2 3 4 5 6 7 8 9 10

12. Visualization of complex structures (e.g., pelvis, acetabulum)

1 2 3 4 5 6 7 8 9 10

13. Usefulness in interdisciplinary discussion

1 2 3 4 5 6 7 8 9 10

Section 3: Teaching Environment and Implementation

14. Preferred group size for teaching sessions (select one):

☐ 1-3 ☐ 4-6 ☐ 7-10 ☐ >10

15. Preferred session format (select all that apply):

☐ Instructor-led ☐ Self-study ☐ Hybrid ☐ Other: _____

16. Satisfaction with session frequency (1 = not satisfied, 10 = very satisfied):

1 2 3 4 5 6 7 8 9 10

17. Satisfaction with session duration (1 = not satisfied, 10 = very satisfied):

1 2 3 4 5 6 7 8 9 10

Section 4: Limitations and Suggestions

18. What do you consider the main limitations of 3D-printed models? (Select all that apply)

☐ Production time ☐ Material durability ☐ Limited model variety ☐
Cost ☐ Other: _____

19. Would you like more frequent practice sessions using 3D-printed models?

☐ Yes ☐ No

20. Please provide any additional comments or suggestions on how 3D-printed models could better support your learning:

Thank you for your participation!