

Title: Reusable 3D pelvic floor teaching model for layered construction activities (Super-Models) 200/300

Date: 9/26/2026 - 10/2/2026

Client: Kelsey Henriquez

Advisor: Prof. David Dean

Team:

Katherine Ahlquist (kahlquist@wisc.edu) - Co-Team Leader

Sara Mlodik (mlodik@wisc.edu) - Co-Team Leader

Mina Hawkins (mjhawkins@wisc.edu) - Communicator

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Hiba Shah (hashah2@wisc.edu) - BPAG

Karen Pisano (kpisano@wisc.edu) - BSAC

Problem statement

The Physician Assistant anatomy curriculum currently has a pelvic floor anatomy workshop that uses a 2-dimensional paper template of the bony pelvis, on which PA students build pelvic floor musculature and tissues using colored Play-Doh. While the activity promotes hands-on learning, the 2D model does not adequately allow students to develop the three-dimensional spatial relationships required for future clinical practice. The client needs a classroom set of pelvic outlet models that accurately represent the normal adult pelvic anatomy, including anatomical landmarks for muscle and ligament attachment, that can serve as a stable scaffold for students to build pelvic floor musculature. It should be durable enough for repeated classroom use, easy to assemble and store, and allow Play-Doh or another inexpensive modeling material to be adhered and removed without causing residue or degradation.

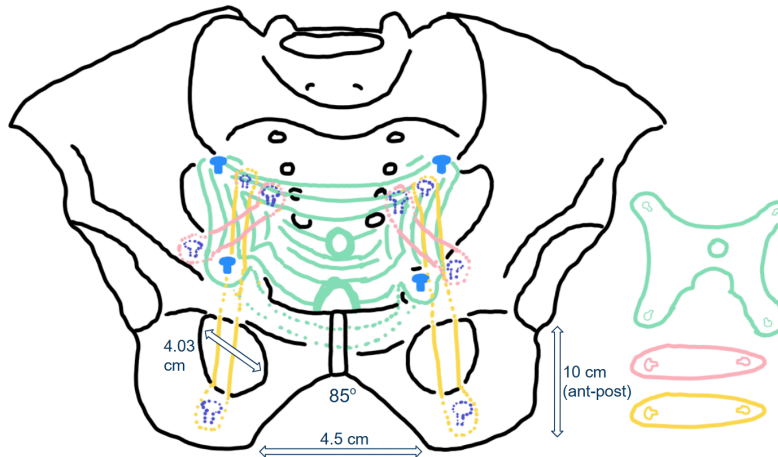
Brief status update

The team completed the design matrix, narrowing the product concepts down to three potential designs. The team also began preparing their preliminary presentations. As we continue exploring fabrication methods, we are considering material selection, manufacturability, and the required skill level. The team is also completing training in areas such as 3D printing and introductory machining, which will support future fabrication and prototyping efforts. Design Matrix can be found here: <https://docs.google.com/document/d/1SEUS7-Uh50NpYQPpawXJ7bfVhG82MssNuN9FHyDev4k/edit?usp=sharing>

Difficulties / advice requests

N/A

Current Design



In the Pegs with Attachments design, there are 6 pieces total: a 3D printed pelvis, a flexible pelvic diaphragm, 2 flexible sacrospinous ligaments, and 2 sacrotuberous ligaments. The outer surface of the model will be coated with matte Mod Podge spray, allowing for better Play Doh adhesion onto the 3D printed surface. The pelvis is a simplified model, with the iliac crest sections superior to the proximal end of the sacrum removed. To allow the attachment of the diaphragm and ligaments, there are pegs on the pelvis surface. The pegs have a thick base and a wider head for durability, and are 3D printed as one structure with the pelvis. Each of the flexible ligaments and diaphragm will have attachment holes at the ends with a wide and a narrow section to allow application and removal of the structures from the pegs. The diaphragm will be shaped like an 'X', having 4 attachment sites on each corner, as well as an inlet and a hole to allow students to scaffold the male or female anatomy. Finally, all structures will adhere to an average of male and female anatomical dimensions, creating a gender-neutral multi-piece pelvis model.

Materials and expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
									\$0.00	
									\$0.00	
Category 2										
									\$0.00	
									\$0.00	
								TOTAL:	\$0.00	

Major team goals for the next week

- Create a fabrication plan to be used for the 3D printing, ligament attachments, and diaphragm attachments
- Complete the preliminary report

Next week's individual goals

- Katherine
 - Help draft a fabrication plan.
 - Draft the preliminary report.
 - Test out different material options for the ligaments and the 3D printing.
- Sara
 - Drafting a fabrication plan for the 3D model
 - Attend meeting with the DI Lab for a design consult
 - Research material options for the ligaments and pelvic diaphragm
 - Continue drafting the preliminary report
- Mina
 - Contribute to a fabrication plan for Design #3.
 - Continue research on surfaces and textures.
 - Work on preliminary report
 - Set up a meeting with our clients to discuss our progress from the past two weeks.
- Abigayle
 - Continue research on material options for pelvic diaphragm and ligaments, consider design modifications as needed based on the fabrication plan currently being developed
 - Research potential cleaning methods for design
 - Work on preliminary report and prepare for upcoming deadline
- Hiba
 - Research materials and cost of materials that we will need
 - Finish CAD of test materials
 - Work on preliminary design
- Karen
 - Contribute to Design #3's fabrication plan
 - Help draft the preliminary report
 - Research different materials for sacrotuberous ligament
 - Test matte Modge Podge on 3D-printed samples

Timeline

Task	Sept			Oct					Nov				Dec	
	11	18	25	2	9	16	23	30	6	13	20	27	4	13
Project R&D														
Empathize	x	x	x	x										
Background...	x	x	x	x										
Prototyping														
Testings														
Deliverables														
Progress Reports	x	x	x	x										
PDS		x	x	x										
Design Matrix			x											
Prelim Presentation				x										
Prelim Deliverables														

Show and Tell														
Final Poster														
Final Deliverables														
Meetings														
Client	x													
Advisor	x	x	x	x										
Website														
Update	x	x	x	x										

Filled boxes = projected timeline

X = task was worked on or completed

Previous week's goals and accomplishments

- Finish preliminary presentation
- CAD and test the 3D print models
- Begin creating a fabrication plan to be used in the preliminary report

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Katherine	9/28	Understanding Design 1 and what to say	.75	4	10.25 hr
	9/29	Design the diaphragm idea	1		
	9/30	Practiced preliminary presentation solo and with group	1		
	10/1	Researched ligament materials	.25		
	10/1	Design sketch for ligament attachments	1		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Sara	9/29	Completed 3D Printing Training Canvas Modules	1	3.5	12 hr
	9/29	Researched the DI Lab 3D printing and scanning options	1.5		
	9/30	Revised project design sketch	0.5		
	9/30	Practiced timing and speaker notes for the preliminary presentation	0.5		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Abigayle	9/27	Modified/adjusted project design sketch	0.5	4.5	16.5 hr
	9/27	Researched possible material options for ligaments/diaphragm	1.5		
	9/27	Developed a rough potential diaphragm design	1		
	9/30	Practiced for preliminary presentation solo and with group	1.5		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
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Mina	09/30	Researched competing 3D female pelvic floor models, gaining inspiration for our design	2 hr	3.5 hr	13.5 hr
	09/30	Practiced presenting with team	1 hr		
	10/1	Revised and practiced my slides for Preliminary Design Presentation	0.5 hr		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Hiba	09/26/26	Training modules	1	4	10.75
	09/27/26	Worked on presentation	1		
	09/29/26	Practiced presenting with group	1		
	09/30/26	Setup of CAD on personal computer	1		

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Karen	9/28	Practiced presentation	.5	3.25	14.5
	9/30	Revised and updated slides	.5		
	9/30	Practiced presenting with group	1		
	9/30	Researched ligament materials	.25		
	10/1	Updated progress report, practiced slides for preliminary presentation	1		