Embouchure Assist Device

Date: 10/23/2026-10/29/2026
Client: Linda Chickering - lindabhat@gmail.com
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Team:
Team Leader: Erika Daniels - emdaniels2@wisc.edu
Team Leader: Anna van Riessen - avanriessen@wisc.edu
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Problem statement

Facial nerve weakness and palsy can affect many aspects of a patient's daily life, including their ability to maintain an adequate air seal around a musical instrument’s mouthpiece. This creates significant challenges for musicians playing woodwind instruments, such as the oboe. Unlike other woodwind instruments, the oboe uses a unique double reed that is unsupported by a traditional mouthpiece, requiring precise and stable embouchure control. The objective of this project is to develop a tailored device to stabilize the embouchure for individuals with facial nerve weakness.

Brief status update

This week the team met with the client and developed new designs based on feedback. The team will be moving forward with a torsion spring “chip clip” design. The team created CAD models of the torsion spring design and 3D printed an initial prototype using PLA. The team also decided on a headset and ordered one for fabrication as well as a pack of torsion springs. The team plans to continue with fabrication and develop adjustable design components using feedback from show-and-tell.

Difficulties / advice requests

Current design

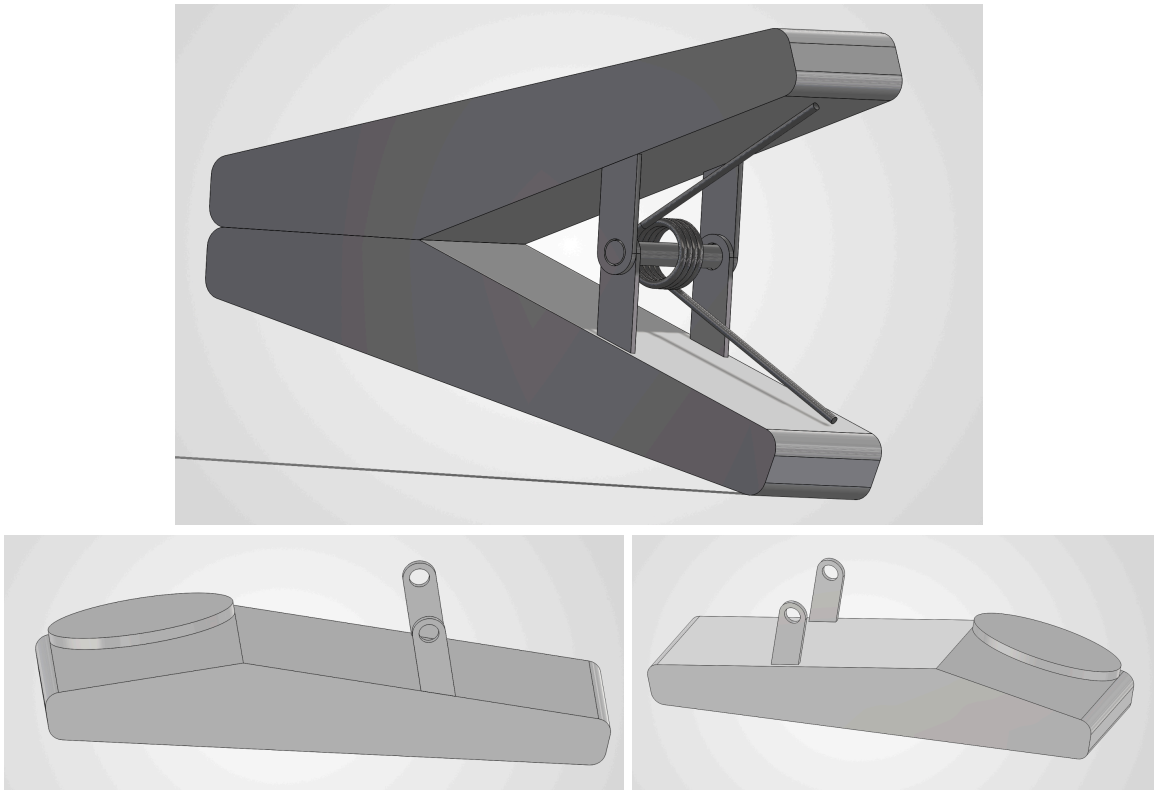


Figure 1: Torsion Spring Design

Materials and expenses

Item	Description	Manufac - turer	Mft Pt#	Vendor	Vend or Cat#	Date	#	Cost Each	Total	Link
Category : 3D Printing + DI Lab										
3-D Print	Force arm prop (TPU)	DI Lab				9/29/2026	1	$0.32	$0.32	
3-D Print	Force arm prop (PLA)	DI Lab				9/30/2026	1	$0.17	$0.17	
3-D Print	Force arm props (PLA)	DI Lab				10/21/2026		$1.30	$1.30	
3-D Print	Force arm props (PLA)	DI Lab				10/23/2026	1	$0.21	$0.21	
3-D Print	Chip-clip prototypes	DI Lab				10/28/2026	1	$0.22	$0.22	
Category 2: Online purchases										
Pressure Sensors	Sensor pads	MECCA NIXITY		Amazon		10/03/2026	1	$12.34	$12.34	MECCANIXITY Thin Film Pressure Sensor, FSR406B 20g-10Kg Force Sensing Resistor Stress Test Sensor Pad for Smart Home, Instruments, 2 Pack: Amazon.com: Industrial & Scientific
Silicone	Silicone Sheets	WochiTV		Amazon		10/20/26	1	$22.99	$22.99	https://a.co/d

										/0i9Sw1t5
Headset	VR headset	KIWI Design		Amazon		10/24/2026	1	$28.99	$28.99	https://a.co/d/00W4wW4t
Torsion springs	Pack of 80 assorted torsion springs			Amazon		10/24/2026	1	$8.29	$8.29	https://a.co/d/00W4wW4t
								TOTAL:	**$74.83**	

Major team goals for the next week

1. Make alterations to CAD models
2. Assemble prototype using CAD models, silicone, springs
3. Design headset attachment

Next week's individual goals

- Anna
  - Participate in CAD design
  - Begin designing headset attachment
  - Prepare for client meeting
- Caden
  - Work on attaching headset to CAD mouthpiece
  - Finalize CAD mouthpiece
- Celia
  - Brainstorm headset attachment methods
  - Epoxy silicone onto CAD arm piece
  - Prep testing for client meeting
- Erika
  - CAD model headset attachment
  - Alter clip CAD model
  - Prepare prototype for client meeting
- Owen
  - Help design headset attachment
  - Help with spring and silicone fabrication
- Owynn
  - CAD model the headset attachment
  - Alter the CAD model based on peer feedback

Timeline

Task	September				October				November				December	
	7	14	21	28	5	12	19	26	2	9	16	23	1	7
Project R&D														
Empathize	X	X												
Background	X	X	X	X										
Prototyping			X	X	X	X	X	X						
Testing					X									
Deliverables														
Progress Reports	X	X	X	X	X	X	X	X						
Prelim presentation				X										
Final Poster														
Meetings														
Client		X			X		X							
Advisor	X	X		X	X	X	X	X						
Website														
Update	X	X	X	X	X	X	X	X						

Filled boxes = projected timeline
X = task was worked on or completed

Previous week's goals and accomplishments

- Anna
  - Altered CAD design with client feedback
  - Begin designing headset attachment
  - Finalize headset choice
- Caden
  - Decided on headset/order headset
  - Help integrate the headset onto the existing pressure components
- Celia
  - Fabricated prototype with spring component
  - Decided on headset choice and order it
  - Worked on headset attachment
- Erika
  - Ordered headset and torsion springs
  - CAD modeling for a new design
  - Altered design choices according to client feedback
- Owen

    - Helped with CAD design
    - Fabricated prototype
- Owynn
    - Fabricate prototype
    - Finish CAD design

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Anna van Riessen	10/24/26 10/25/26 10/28/26	Client Meeting CAD meeting Research	1 1 0.5	2.5	26
Caden Kleepsies	10/22/26 10/24/26	BSAC Meeting Client Meeting	1 1	2	22
Celia Oslakovic	10/25/26 10/28/26	CAD meeting Researched different hinge methods for headset attachment	2 1	3	23
Erika Daniels	10/24/2026 10/25/2026 10/26/2026 10/28/2026	Client meeting CAD modeling new design 3D printing Researched torsion springs, anatomy 3D printing	1 2 0.25 0.75 0.25	4.25	26.25
Owen Johnson	10/24/2026 10/28/2026	Draw new design idea Research torsional sprigs	.25 1	1.25	21.75
Owynn Garrelts	10/24/2026 10/25/2026 10/26/2026 10/27/2026	Client Meeting CAD modeling new design Initial 3D printing of prototype Scaling CAD model of prototype	1 2 .25 .75	4	24.5