

Improved Dental Articulator



From left to right: Jake Haas, Olivia Trettel, Audrey Percich, Tim Tibesar

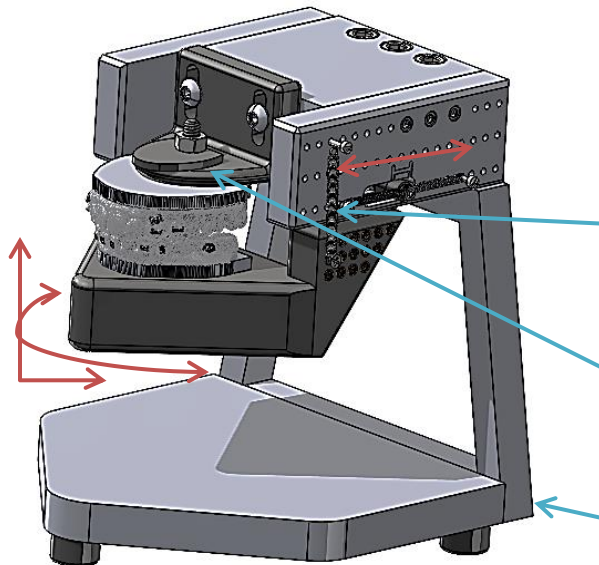
PROJECT SUMMARY:

A dental articulator is a mechanical hinged tool used by doctors, dentists, and orthodontists to map a patient's bite position. Traditional articulators fix the lower dental arch and limit movement in multiple directions, making them unsuitable for orthodontic treatments. Our device improves articulation, allowing more dynamic and precise jaw movement that mimics the human jaw.

DESIGN GOAL:

Create an advanced physical simulation of temporomandibular joints and accurate jaw function.

Seen to the right, the improved dental articulator will be used in a laboratory setting to test clear orthodontic appliances.



Three degrees of freedom shown in red

The use of springs that act as the muscles in the human jaw that can be adjusted for each patient

Customizable arch placement and teeth alignment using provided tool with new teeth molds for each patient

Refined bases and supports for modern look



TEAM 20

INDUSTRY REPRESENTATIVE

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DESIGN CONSTRAINTS:

- At least three degrees of freedom on the lower arch.
- Model the adult jaw motions:
 - Anterior and posterior translation (forward and backward)
 - Pitch (open and close)
 - Yaw (rotational side to side)
- Model the adult jaw in weight and forces in the gravitational direction.
- Customizable to model a variety of patients.