

VOLLEYBALL LOW TECH FACTORY



A hands-on approach to making a volleyball.

INSIDE THE BALL

RESEARCH / FROM MATERIALS TO MAKING

I examined the outer cover, winding layer and bladder, then used this material breakdown to organise six making stations.

DESIGN AIM

Make each operation visible and hands-on.



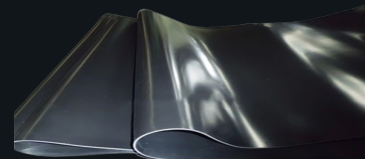
01 / OUTER COVER

PU



02 / WINDING LAYER

Yarn

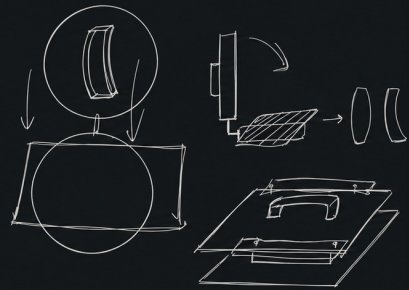


03 / BLADDER

IIR rubber

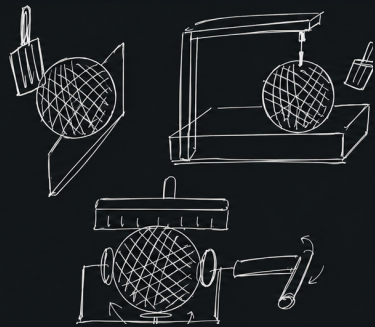


ONE BALL. SIX STATIONS.



01 / CUT

A fixed cutting profile guides the panel shape.

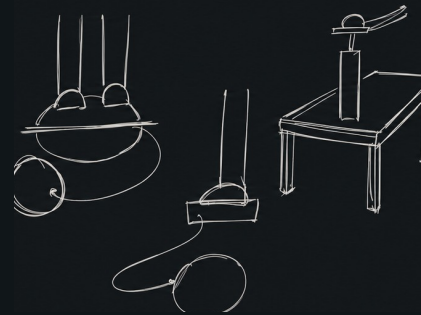


04 / GLUE

Overhead support leaves the ball surface accessible.

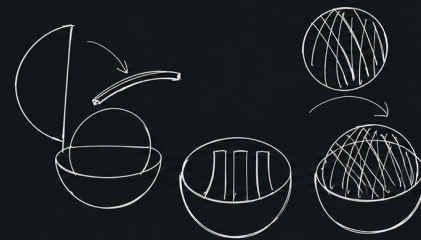
AI-assisted redraws of original concept sketches.

Concept sketches / Station design



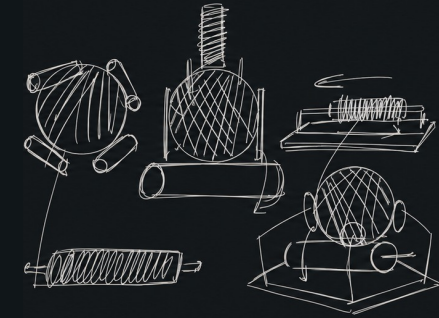
02 / INFLATE

A dedicated base locates the pump and bladder.



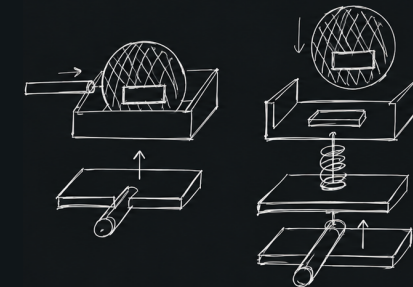
05 / COVER

A hemispherical support locates the ball for panel placement.



03 / WIND

Ball support and rotation work beneath a thread feed.



06 / LABEL

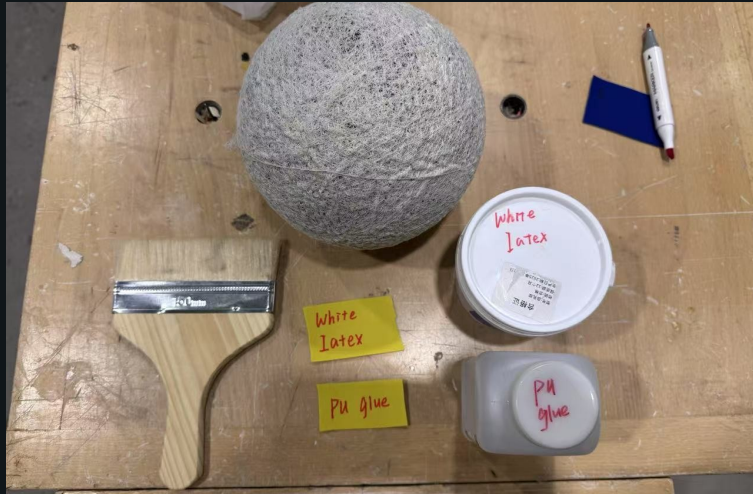
A pressing tool meets the ball at a defined contact position.

TEST BEFORE BUILDING

MATERIAL TRIALS / SELECTION THROUGH MAKING

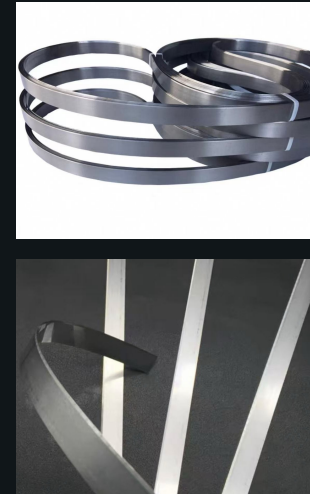
Short comparative trials informed the adhesive, blade material and an inflation reference for this prototype.

01 / ADHESIVE



Compared white latex and PU adhesive. The short trial favoured PU for tack.

02 / BLADE



Compared bending response; selected a double-edged stainless-steel blade.

03 / INFLATION



Compared bladder form after 10, 15 and 20 pump strokes. Used 20 as a working reference for this setup.

CUT. FIT. BUILD.

HAND FABRICATION / FROM SKETCH TO PARTS

I built the wooden templates, bases and supports, translating the sketches into physical parts through measuring, cutting, positioning and hand assembly.



MEASURE AND MARK

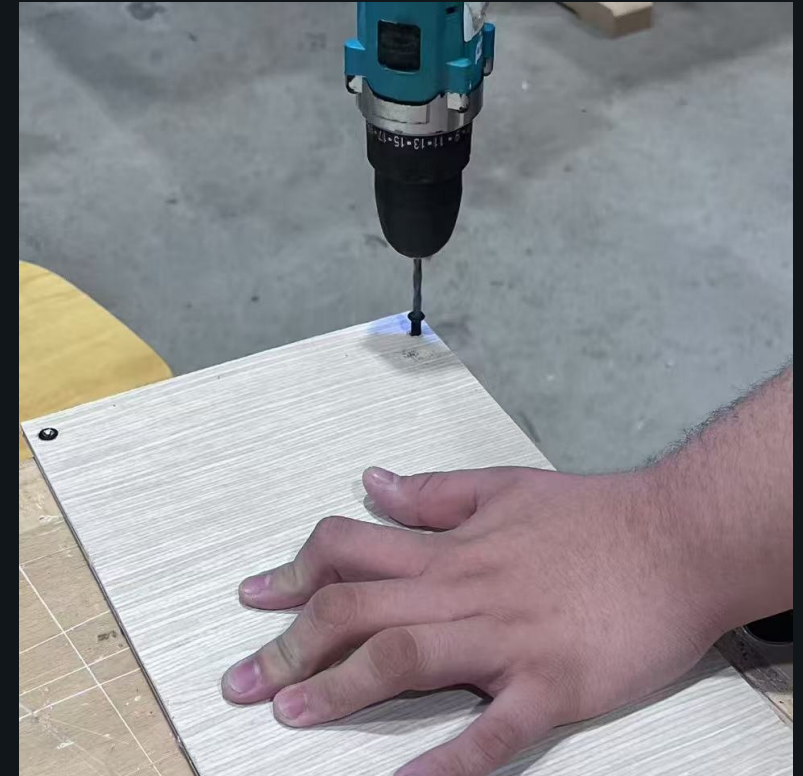
Set out the wooden parts.

Woodworking / Hand fabrication



BUILD THE TEMPLATE

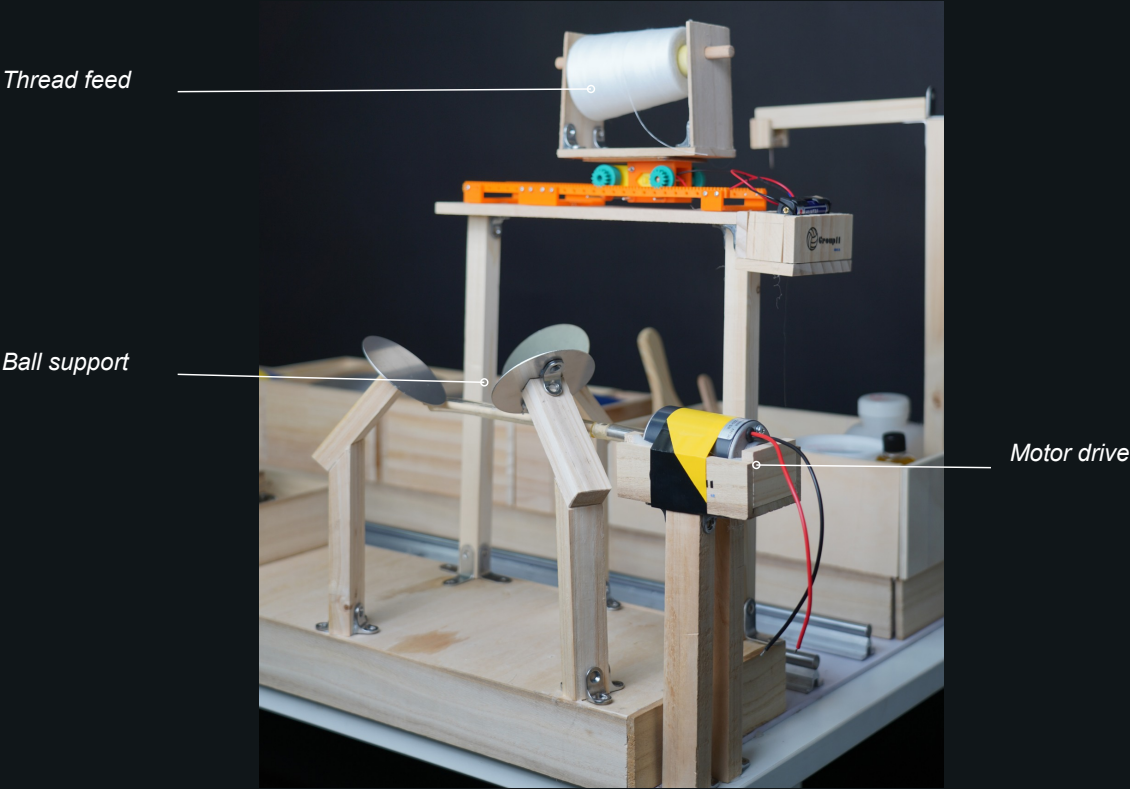
Form the cutting profile.



DRILL AND POSITION

Prepare the wooden base.

MAKE IT. MOVE



WINDING / SUPPORT + FEED + DRIVE

The ball is held below the thread feed and rotated by the drive.

Mechanism assembly / Structural details

MECHANISM ASSEMBLY / SUPPORT AND MOTION

The winding station combines ball supports, a thread feed and a motor drive. Other stations use shaped supports and a pressing tool to position the ball and its cover.



COVER / SHAPED SUPPORT

The hemispherical bowl supports the ball during panel placement.



LABEL / DEFINED CONTACT

The pressing pad meets the ball at a fixed working position.

FOLLOW THE MAKE

PROTOTYPE / SIX OPERATIONS

From material preparation to the final mark, six stations organise the making sequence. Station and preparation records show the tools and materials used at each step.



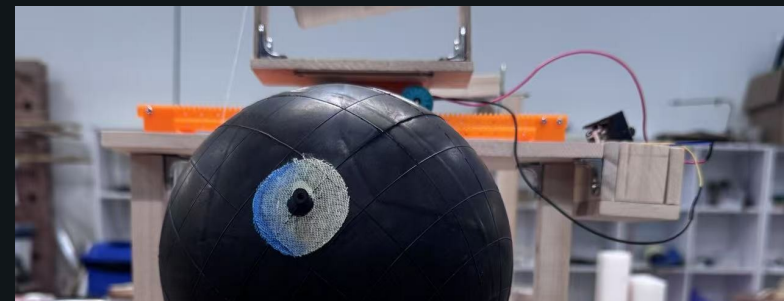
01 / CUT

Prepare the outer-cover panels.



02 / INFLATE

Give the bladder its basic volume.



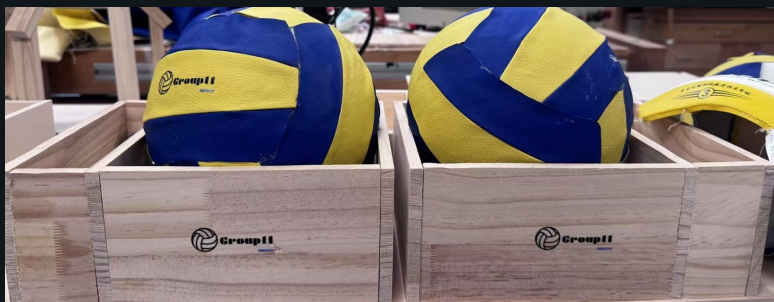
03 / WIND

Wrap thread around the bladder.



04 / GLUE

Support the ball for adhesive application.



05 / COVER

Position the outer-cover panels.



06 / LABEL

Position the final mark for pressing.

FROM IDEA TO PROTOTYPE

COLLABORATIVE PROJECT / GROUP 11

Zichen Zhou / Shenghuan Gao

Ruolin Huang / Zihuan Yang



OUTCOME / PERSONAL CONTRIBUTION

I developed the station concepts, compared key materials and carried out the woodworking, hand fabrication and mechanism assembly.

REFLECTION

The automated steps were not consistently reliable, and the finished balls remained rough in their detailing.

NEXT FOCUS

Improve process repeatability and finish quality.