Endeavor 3D

PERSONALIZED SPINAL BRACES

Modulate Technologies harnesses MJF 3D printing to create patient-specific scoliosis braces designed for a lightweight, comfortable fit.

CHALLENGE

Going into this project, Modulate Technologies needed a MJF 3D printing partner that could deliver high-quality and accurate spinal orthoses for scoliosis treatment. Since the brace was patient-specific, design flexibility was essential. Furthermore, Modulate Technologies needed to find materials that allowed the brace to be rigid in some areas and flexible in other areas, providing the necessary support while adapting to the patient's contours.

SOLUTION

Endeavor 3D leveraged MJF 3D printing technology and advanced surface finishing to produce patient-specific spinal braces. The MJF 3D-printed brace consisted of four custom-fit parts—two made from TPU for adaptive support and two from PA 12 S for structural strength. Thanks to MJF's high-density nesting capabilities, Endeavor 3D was able to print multiple brace sets in a single build, accelerating production. Additionally, the ability to print on-demand enabled Modulate Technologies to meet customer demand.

BENEFITS

1. Adaptive Patient Fit

The combination of TPU and PA 12 S materials allowed for a brace that was both rigid where necessary and flexible where needed, improving patient fit and comfort.

2. High Quality Surface Finish

Multi Jet Fusion technology and our PowerShot C surface finishing technology delivered highly accurate parts with a smooth surface finish.

3. Scalability of Production

Endeavor 3D optimized the printer bed density to print more parts per build, improving production efficiency. The scalability allowed for quick turnarounds and the ability to meet growing demand without sacrificing quality.

AT A GLANCE

INDUSTRY

Medical

TECHNOLOGY

Multi Jet Fusion

MATERIAL

TPU and PA 12 S

BENEFITS

- Adaptive Fit
- Surface Finish
- Scalability