

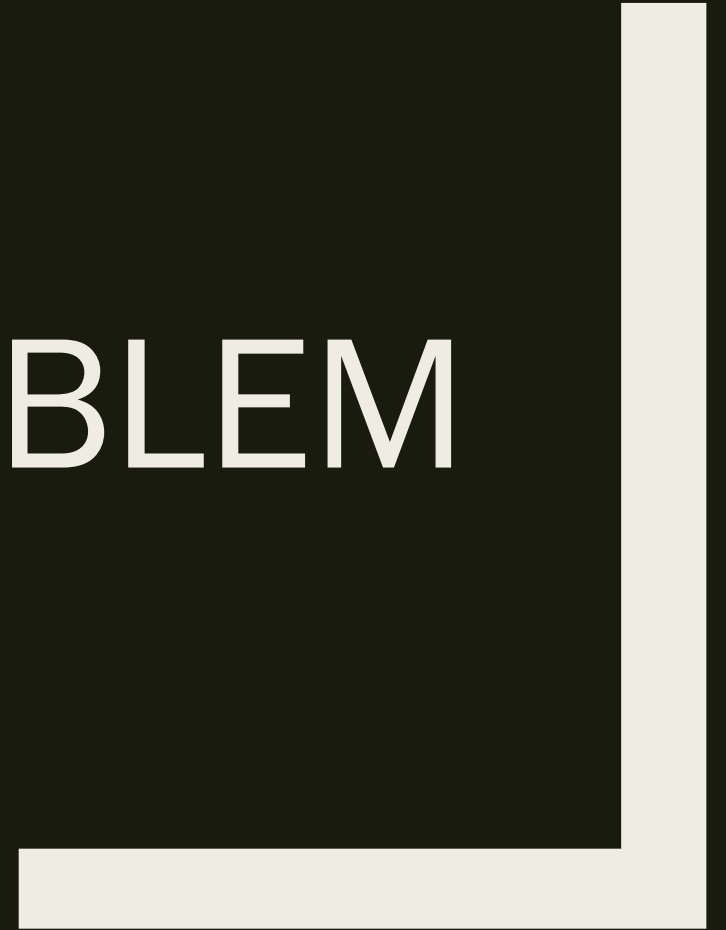


**CUSTOMIZABLE, COMFORTABLE,
AND CHEAP DAYTIME TOE
POSITIONER (SET OF TWO)TM**

Alexandra, Tennessee



PROBLEM



- I am 13 years old and already have bunions on my feet along with 36% of the population.
- I wear nighttime toe correctors to help with the pain bunions cause. My toes are smushed throughout the day ruining any progress I made at night.
- This problem affects all people with bunions.

Why should anyone care?

- Untreated, this can cause severe pain and lead to early arthritis.
- For bunions to be fixed later in life, surgery is required.
- Sometimes this surgery works, sometimes it does not.
- This surgery costs around [\\$5,500](#).
- Also finding shoes that accommodate bunions and are stylish is a challenge.

Nighttime Toe Correctors



Bunion

EXISTING SOLUTIONS



- Silicon Toe Correctors - \$20

- *Only one size*



- Fabric Toe Correctors - \$25

- *Doesn't hold in the correct place for long*



- Nighttime Toe Correctors - \$20

- *Only comfortable to wear at night*



MY SOLUTION



Customizable, Comfortable, and Cheap Daytime Toe Positioner (Set of two)TM

■ CHARACTERISTICS:

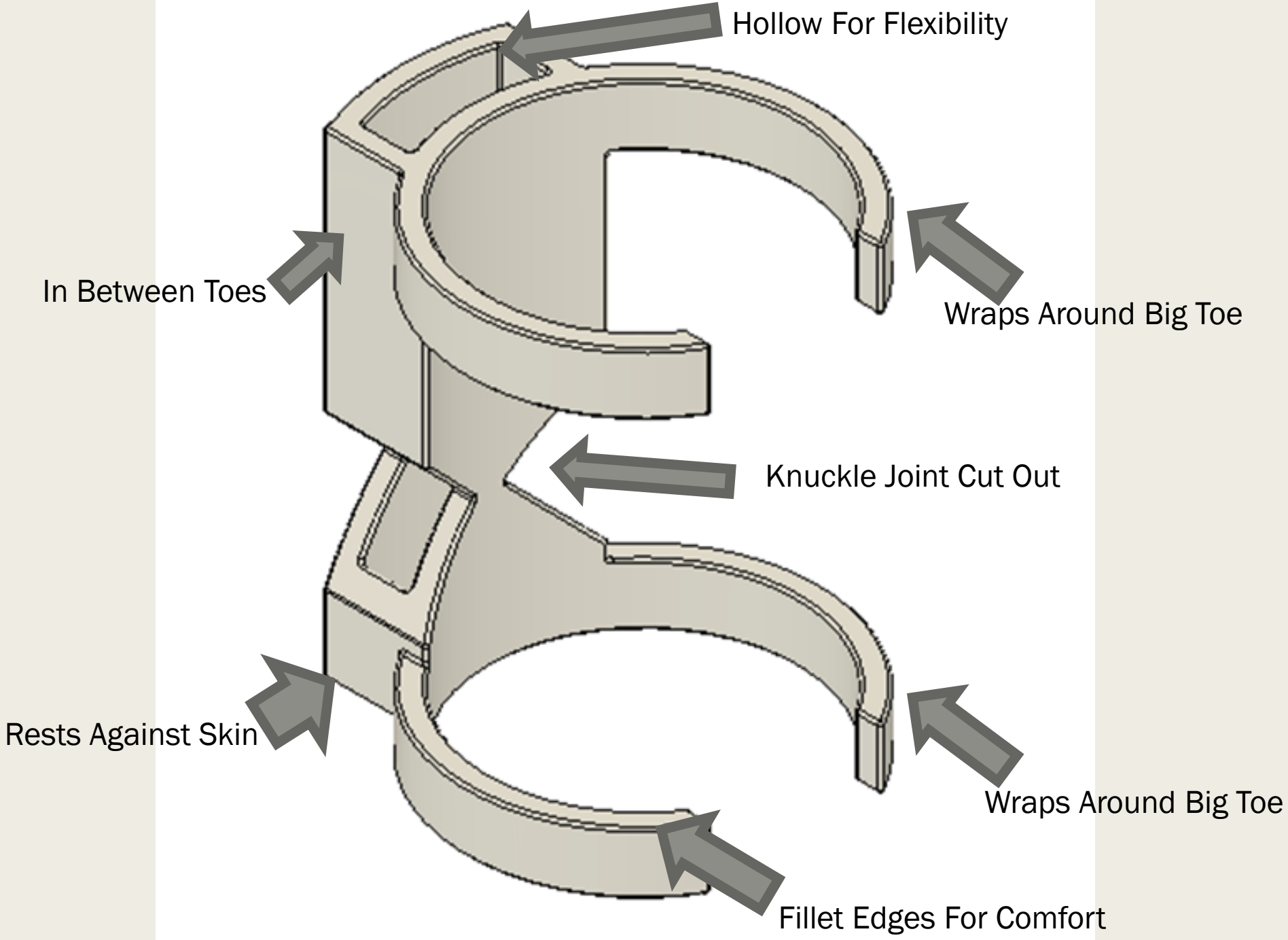
- *Customizable*
- *Uses flexible material for full range motion*
- *Good grip on toe*
- *Cheap*
- *Worn during the day with regular footwear*
- *Easy to use*
- **Maintains progress made while wearing nighttime toe correctors**

Customizable

Using parameters, customers are able to put in personalized measurements to ensure the comfort and maximize the Toe Positioner's abilities.

Customers send in measurements they made using the sizing guide.

ToeWidth	in
ToeLength	in
ToeCorrectionDist	in
RingThickness	in
SecondToeThickness	in
BigToeThickness	in
RingWidth	in
DistFromToeToBott...	in



Hollow For Flexibility

In Between Toes

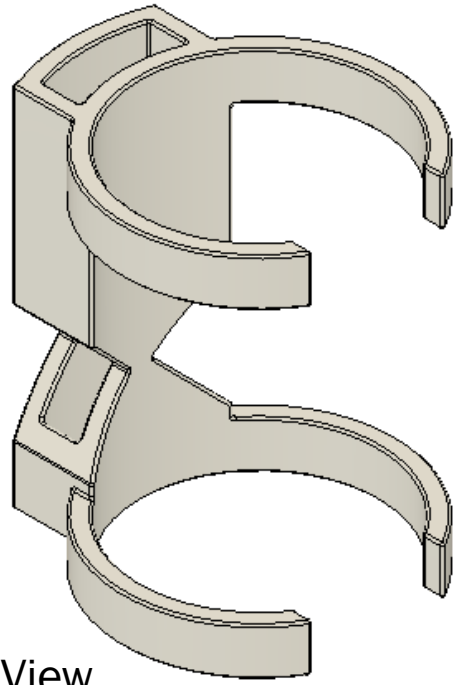
Wraps Around Big Toe

Knuckle Joint Cut Out

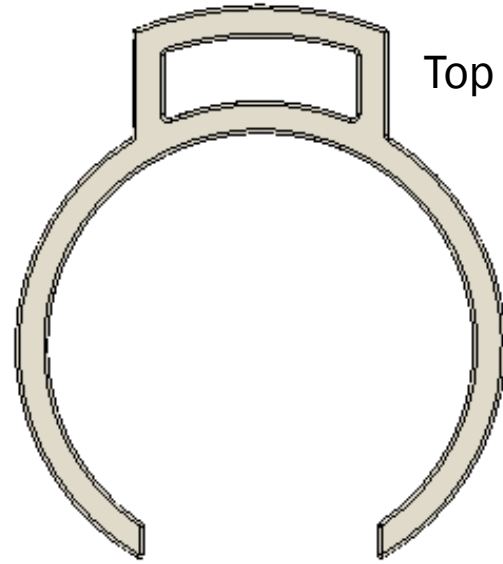
Rests Against Skin

Wraps Around Big Toe

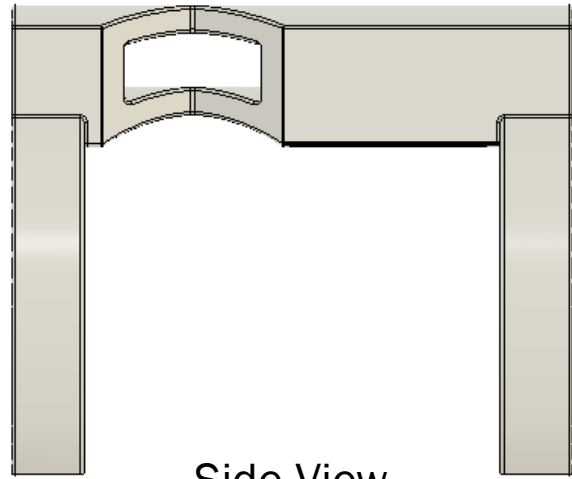
Fillet Edges For Comfort



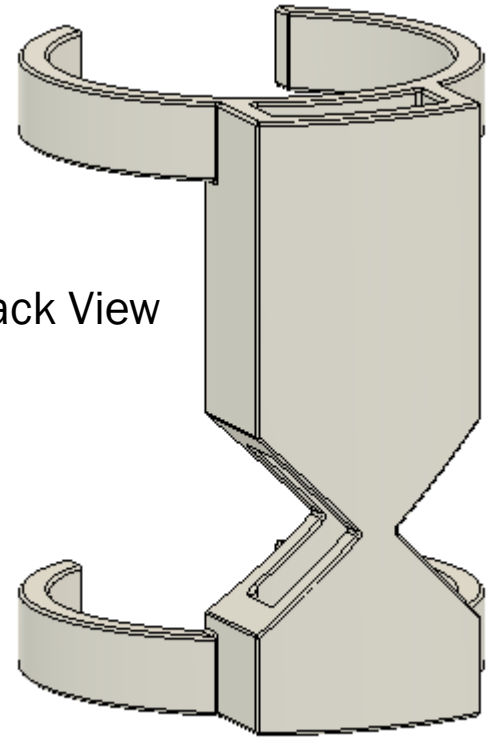
Full View



Top View



Side View



Back View

Material Used:

■ NINJAFLEX (TPU FLEXIBLE FILAMENT)

- *\$25 per reel*
- *One 0.5 kg reel equals at least 175 sets*
- *Super flexible*
- [NinjaFlex from bhphotovideo.com](http://bhphotovideo.com)

Cost per Pair

- $\$25 \text{ per reel} / 175 \text{ pairs} = \$0.14 \text{ to print a pair}$
- Marketing, Electricity, Adhesive (for bed), Maintenance, Time = $\$0.85$ for each pair
- Total Cost Per Pair = $\$0.99$
- Retail Price = $\$4.99$ + Shipping and Handling
- Profit = $\$4$ per pair

DESIGN PROCESS



Major Problem

- Bunions hurt and can cause early arthritis.

Solution

- 3D printed Toe Positioner (Set of Two)TM

Problem with Toe Correctors Currently on Market

- Expensive, uncomfortable, and did not stay in place

Solution

- Cut Out At Knuckle For Motion

Problem with Version 1

- Not Full Range of Motion

Toe Positioner (Set of Two)TM Characteristics

- Customizable, Cheap, and Comfortable

Problem with Version 4

- Toe Positioner Had Sharp Edges Making It Uncomfortable

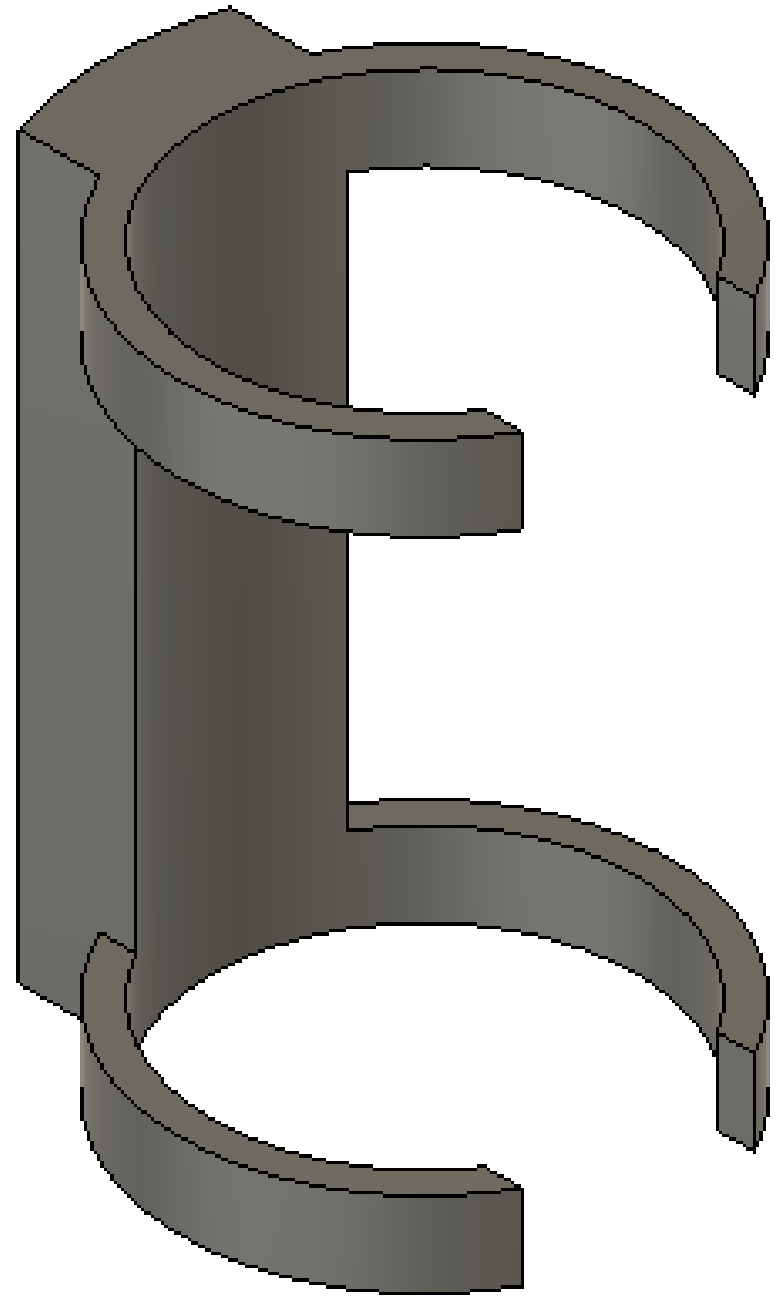
Solution

- Fillet All Edge For Smooth Feel and Comfort

Final Solution (Version 6)

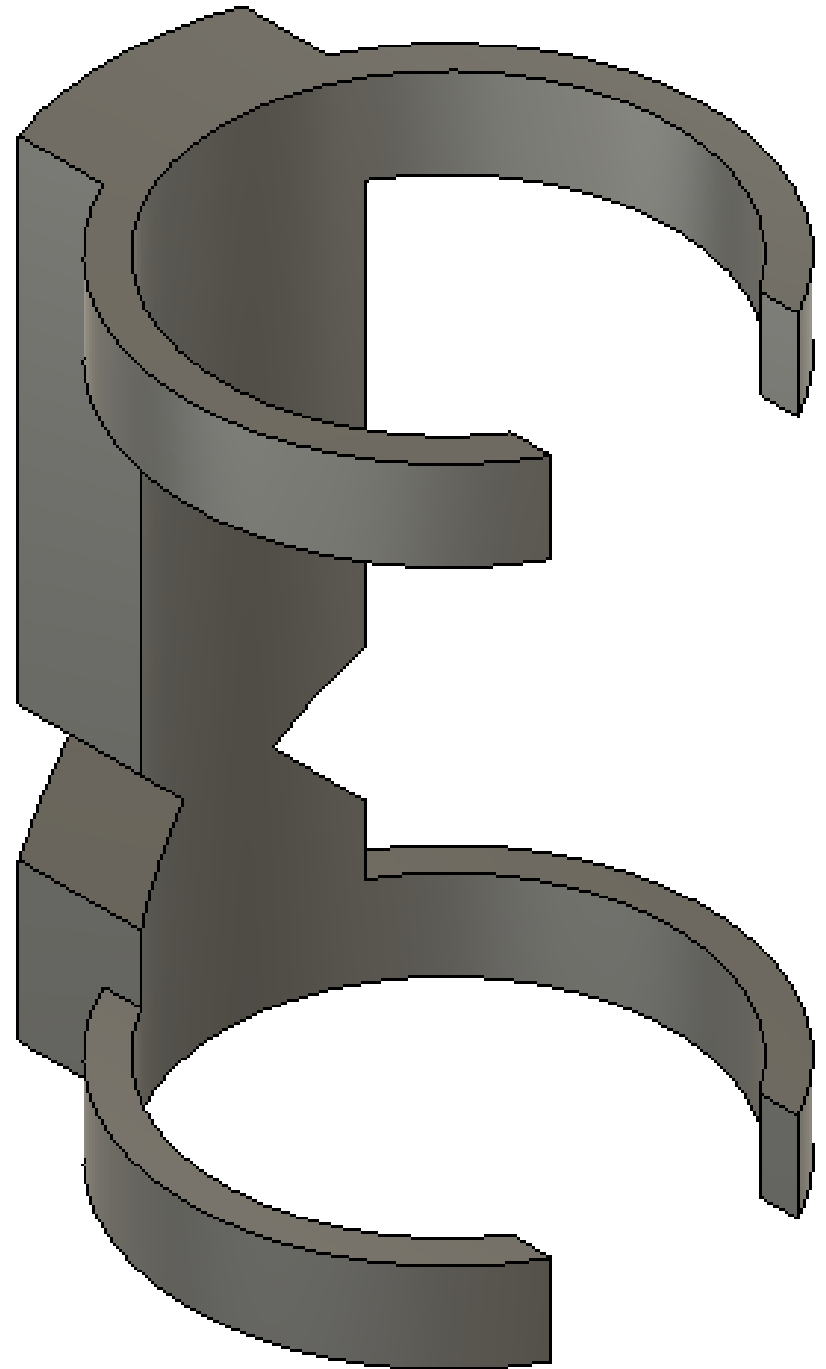
Version 1

Original



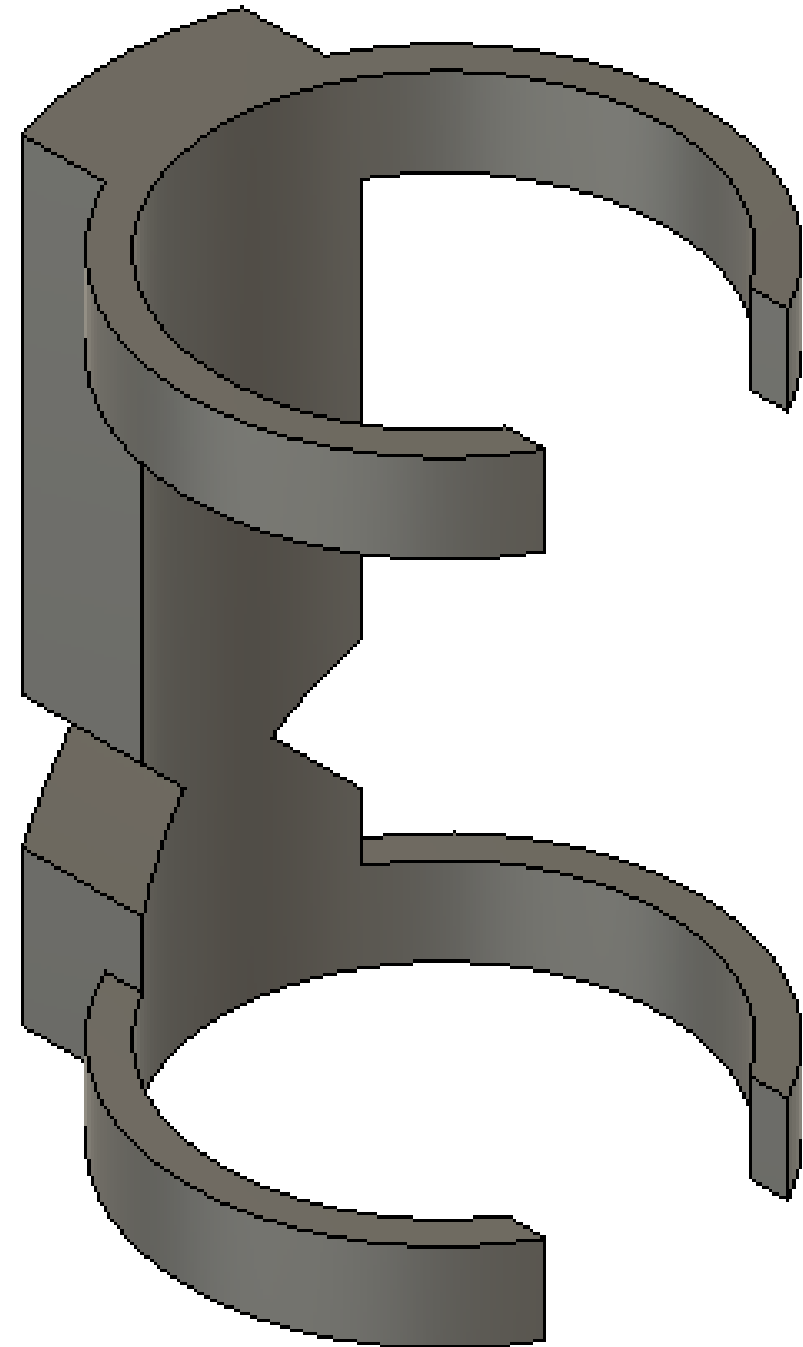
Version 2

Cut Out For
Movement



Version 3

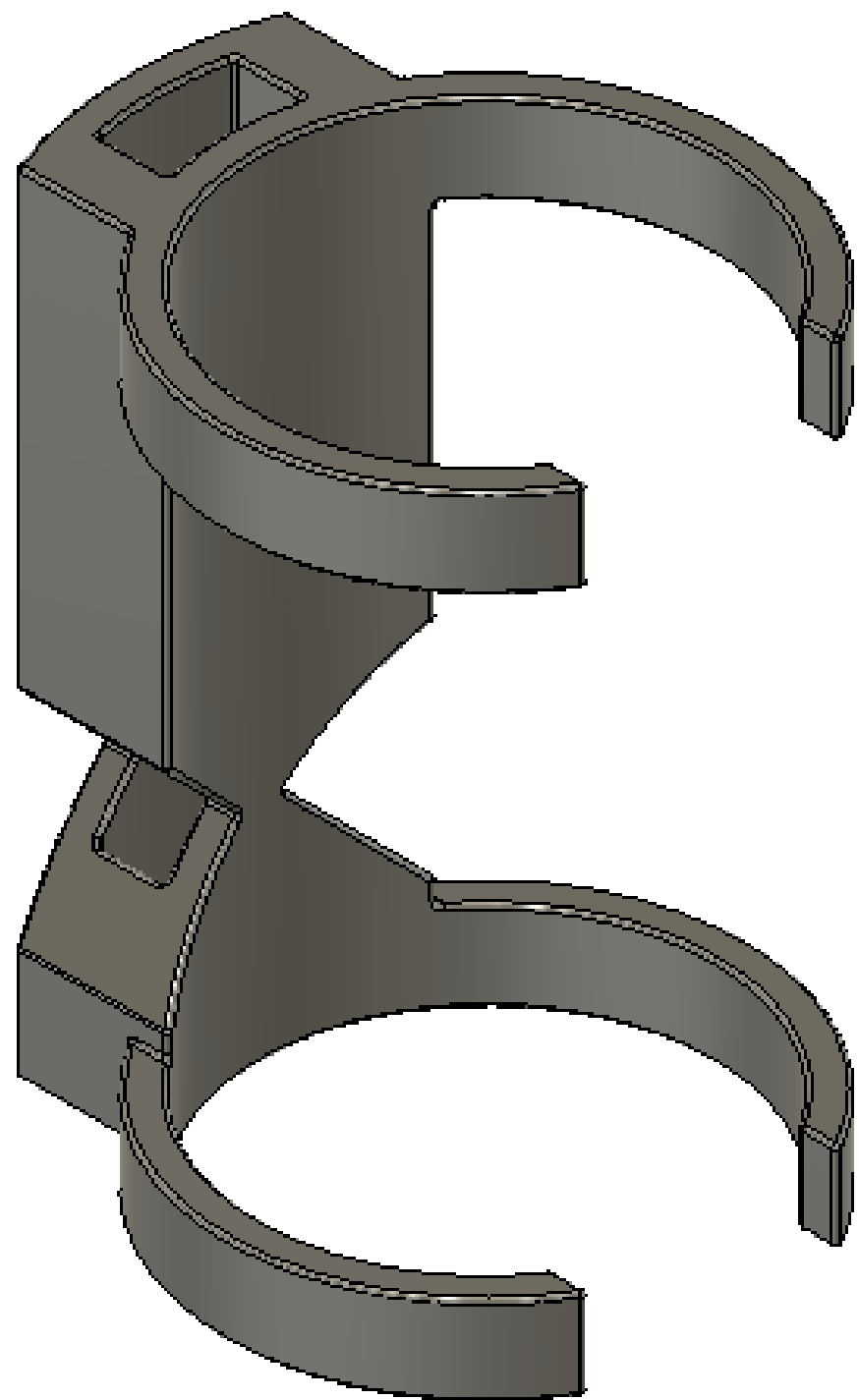
Commented
Parameters and
Added Steps To
Make A More Useful
Toe Positioner™



Version 4

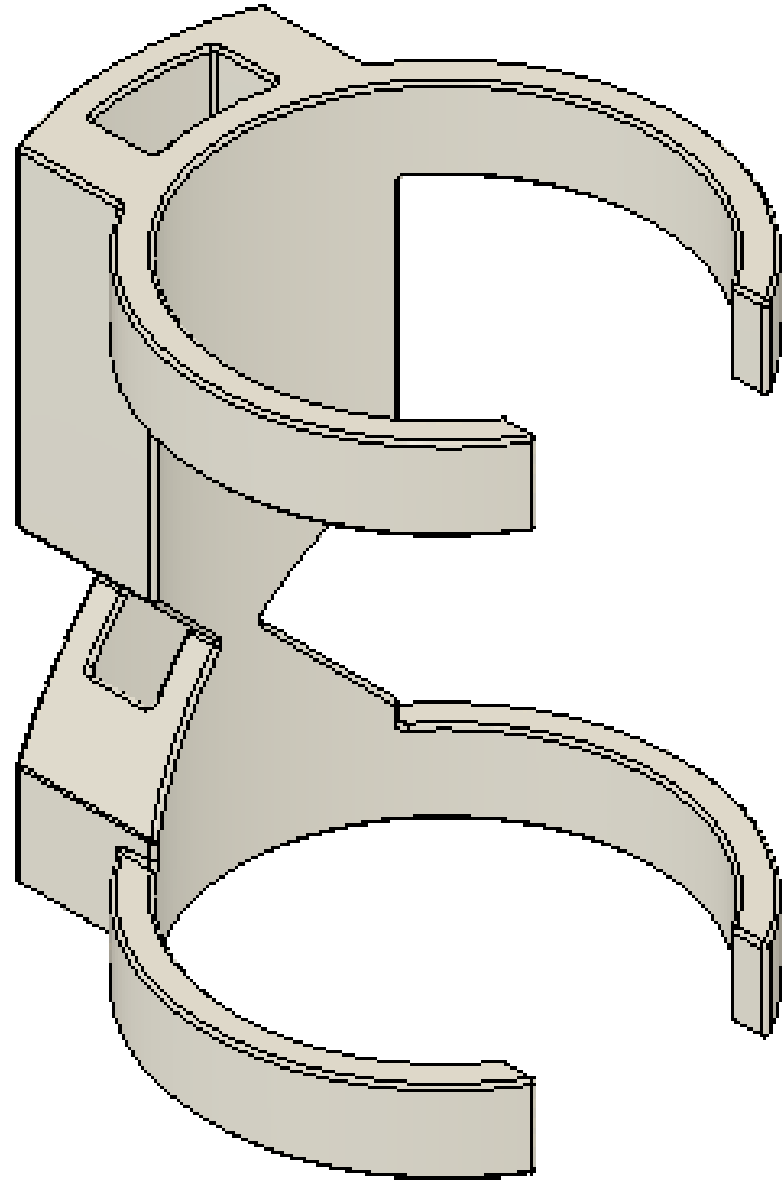
Made the Toe
Positioner™ Hollow
for Movement

Filletted Edges for
Comfort



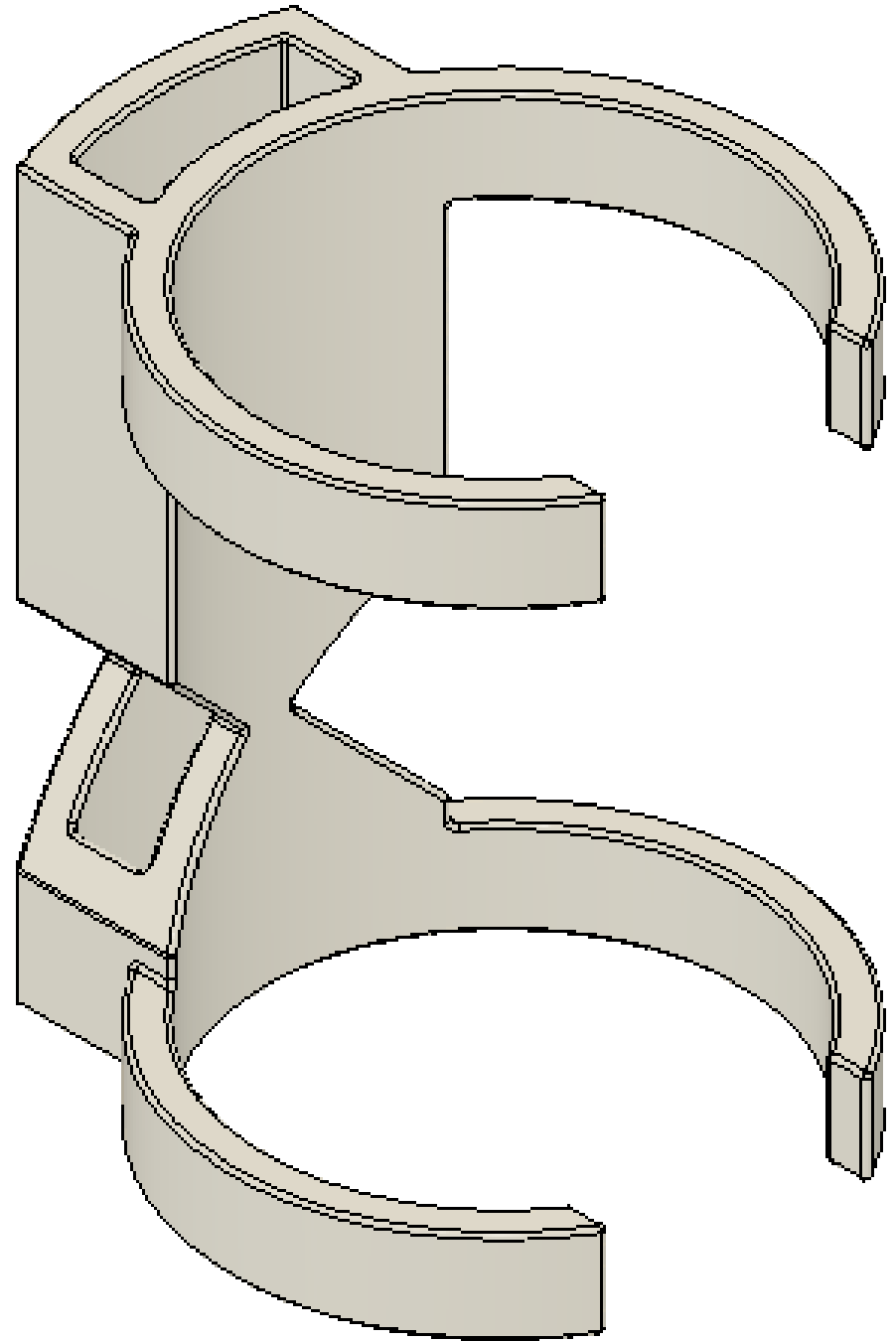
Version 5

Converted the
Material in Fusion
360 to ABS (No
NinjaFlex Option is
Available)



Version 6

The HOLLOWED
Section Made Bigger
for Even More Motion



SOURCES



- Fusion 360
- <https://www.webmd.com/skin-problems-and-treatments/ss/slideshow-about-bunions>
- <https://www.sciencedaily.com/releases/2011/02/110223092217.htm>
- www.ebay.com/b/bunions-blue-orthotics-braces-orthopedic-sleeves/19264/bn_93402745
- [Dr. Fredrick's Original Temporary Bunion Correctors](#)
- https://bunionbootie.com/product/buy-bunion-bootie/?gclid=EAlaIQobChMIpLqniMDu3gIVwpyzCh0iHQJPEAQYAiABEgK0ePD_BwE
- [NinjaFlex from bhphotovideo.com](#)
- <https://amino.com/blog/bunion-surgery-cost/>
- www.sculpteo.com

THANK YOU FOR YOUR
CONSIDERATION

