

MEDNET

Model Exchange & Development of Nursing &
Engineering Technologies



Prosthetic Leg

MEDNET File:

Description

Prosthetic_Leg.zip

A 3D printed prosthetic leg made with PLA filament and PVC piping.

The prosthetic socket is made from PLA filament, this part would attach to the patient's knee.

The Prosthetic socket is then attached to the PVC piping, which can be cut to the individual

Features

patient's correct length. The PVC piping is then attached to the 3D printed foot, which has a 3D printed spring in the heel of the foot to provide movement with more ease. The 3D printed toe piece is then attached to the foot. All of the previously mentioned pieces, except the toe piece, are attached to one another using screws and 3D printed clamps. The toe piece is attached to

Development Information

the foot through a hole with a nut and bolt insertion.

Materials needed: PLA filament and PVC piping

Finished dimensions: 23.5"x 9.5"x 4.5"

Screws (size #2) \approx 4

Nuts and bolts (size #2) \approx 7 (7 nuts and 7 bolts)

PLA filament \approx 0.795 of a roll

1" PVC piping \approx 13.5"

Production time \approx 80 hr

Approximate materials cost: \$30.15

Instructions for Use

The length of each prosthetic leg can be changed to fit each patient's particular leg length. This prosthesis is constructed to be comfortable for the patient and help them with mobility.

Material Procurement Information

Filament: Hatchbox Filament 1.75mm - \$22.99/roll (prices vary per color)

https://www.amazon.com/HATCHBOX-3D-Filament-Dimensional-Accuracy/dp/B00J0ECR5I/ref=sr_1_4?crid=2GJUX43SIM4TP&dchild=1&keywords=pla+filament+1.75mm&qid=1590077168&sr=8-4&prefix=pla+filament%2Caps%2C178&sr=8-4

PVC piping: Charlotte Pipe 1" by 20' - \$5.19

<https://www.lowes.com/pd/Charlotte-Pipe-1-in-dia-x-20-ft-L-200-PSI-SDR-21-PVC-Pipe/3133105>

Screws: Freedom #2 by 1 1/2" Saddle Stainless Steel 12 count - \$2.99

<https://www.lowes.com/pd/Freedom-2-x-1-1-2-in-Saddle-Stainless-Steel-Square-Interior-Exterior-Multi-Material-Lattice-Screws-12/1000374207>

Bolts: Hillman 4mm by 30mm zinc plated fine thread hex bolt 4 count (x2) - \$5.04 (total)

<https://www.lowes.com/pd/Hillman-4mm-x-30mm-Zinc-Plated-Fine-Thread-Hex-Bolt-4-Count/3050729>

Nuts: Hillman 4mm by 0.7 zinc plated steel hex nut 10 count - \$1.92

<https://www.lowes.com/pd/Hillman-4mm-x-0-7-Zinc-Plated-Steel-Hex-Nut-10-Count/3012777>

*citations: Prosthetic Leg. MED-NET. Retrieved from uahmednet.org. Adapted from Thingiverse.com.