Footpads

Covers that provide padding for the tops of feet in the ISS



Ideas from

Clear Springs H.S., Texas

Warren Tech, Colorado

Eagle Crest, Colorado

Platteville H.S., Wisconsin

Conroe H.S. Texas

iSchool, Texas

Loral H.S. Montana

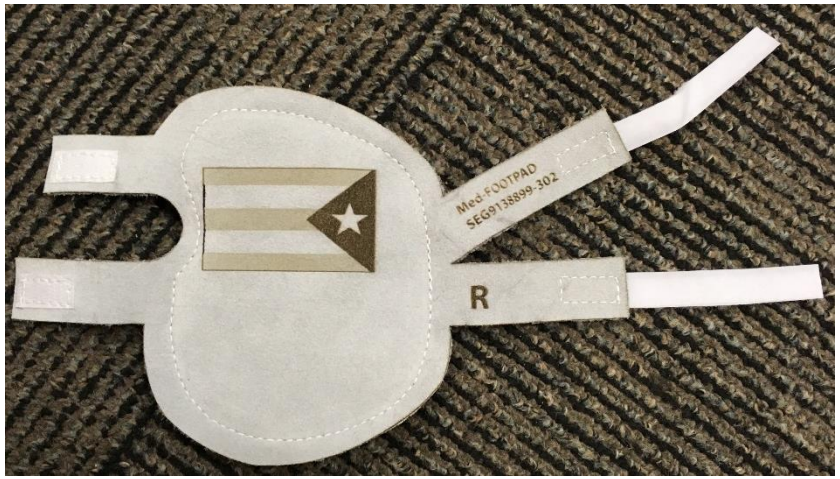
Fairport H.S., New York

Built by

Conroe and Maddison High Schools

NASA HUNCH Team

Don Pettit, Alli Westover, Glenn Johnson, Flo Gold, Marcie Dickson

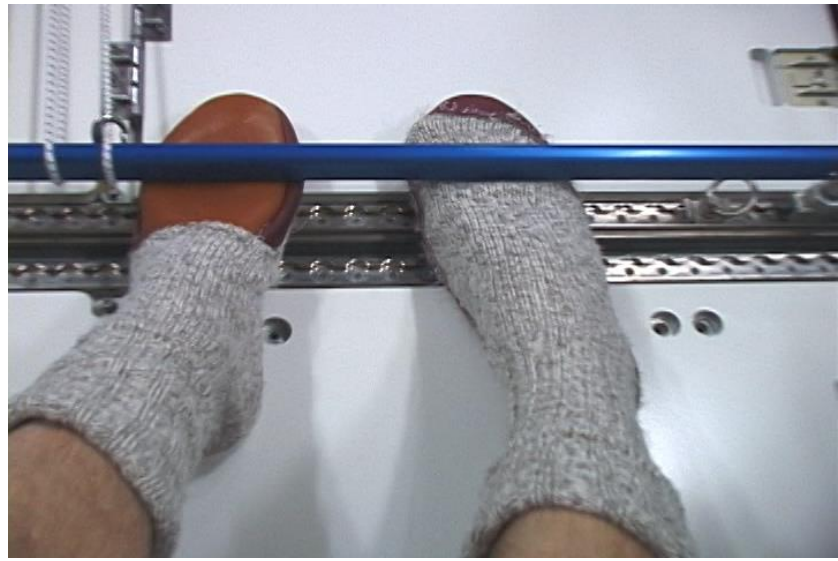




Problem:







- When floating through the station, handrails are often used as foot restraints by crew by slipping their feet under the handrail.
- Since the tops of the feet don't have any padding between the bone and the skin, the crew often experiences soreness and irritation until calluses build up.
- Socks are not thick enough or stiff enough to provide protection.
- Several astronauts have expressed a need for some kind of a pad to protect the tops of their feet.
- There is not a COTS type of sock or slipper that fits this need.

Student response

- Several groups of HUNCH students from all over the country presented their ideas with several different materials and versions.





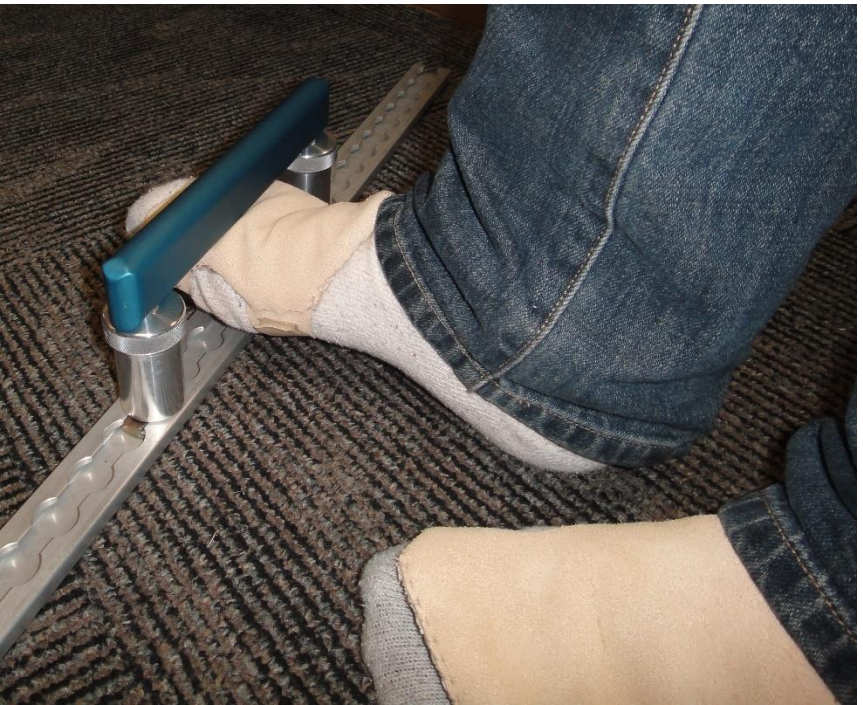


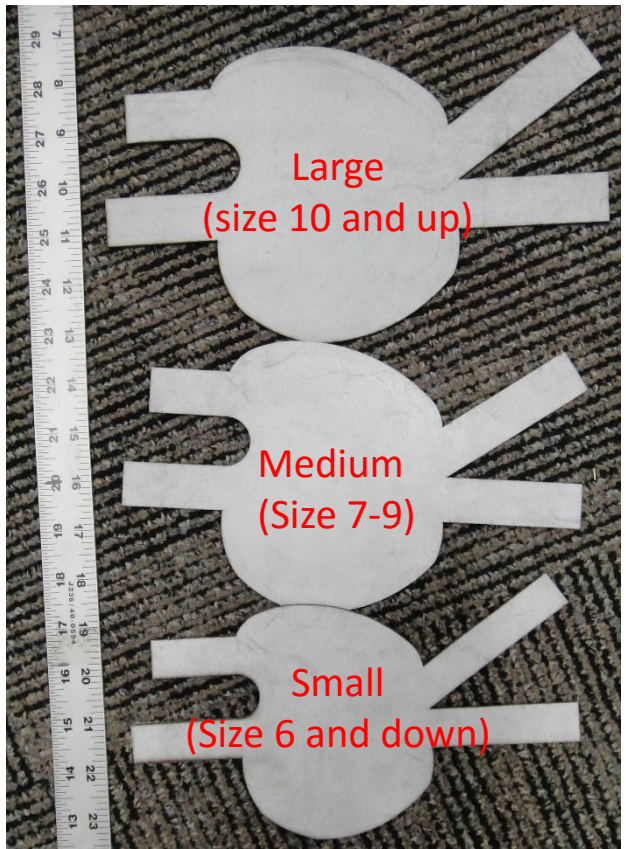


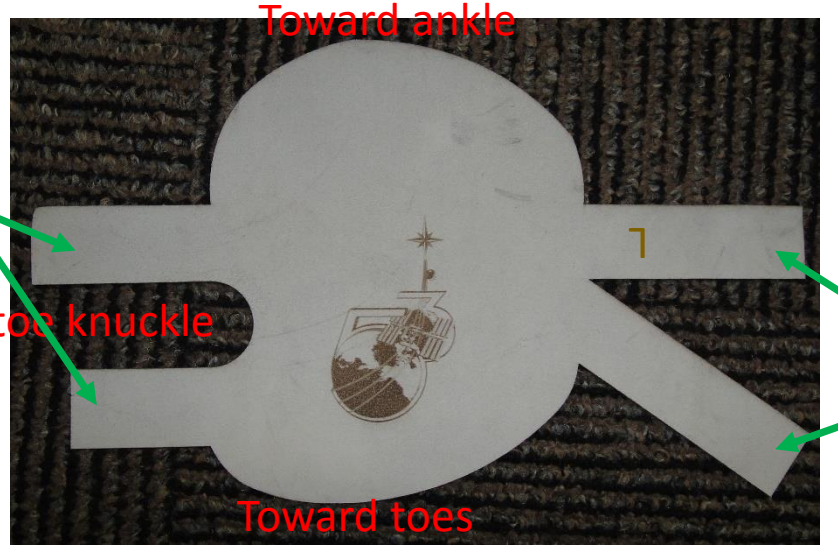


Features of final design

- Slipper—not a sock--so that it doesn't get as dirty and can be used longer
- Flight units will be Gray Leather exterior for grip and to match color with socks
- ¼" nomex felt for padding
- Cotton bottom cover for comfort
- Velcro straps on the bottom for adjustability
- Personalized with mission patch or initials for identification.
- Left and right designation on strap







Flight leather color and logo



Materials:

All materials have been flown previously

- Leather--
- Cotton Batiste Fabric—WH-COTBATST-128-60”
- Nomex felt—MC8-4592B
- Velcro Hook—190528
- Velcro, Loop--190388
- Nomex thread—A-A-50195
- Logo is laser etch

Delivery Status

- Final drawings are completed and in EDCC
- Leather was cut and laser etched by Conroe High School
- Final patterning and sewing was done by Madison High School
- Built 1 small, 1 medium and 1 large for crew office or crew preference table to determine their size preference.
- 4 sets of Footpads were launched on Space X 12 on August 14, 2017
- Astronauts will wear and evaluate the Foodpads over the course of their mission and report back to the Crew Office to determine if they would like more available for future crews and any changes that would make them better.

Flight Units packaged and ready to fly







Joe Acaba, Paolo Nespoli, Mark Vande Hei, Randy Bresnik sporting their HUNCH Footpads



Randy Bresnik trying out the Foodpads while working in the Air Lock

Crew Comments

- All the comments were very similar from the crew that gave HUNCH both compliments and improvements.

- “Padding amount is great and after being up here for >100 days it was a nice change. Improvement however needs to be made to keep it on the feet when in use. Other crew said that they needed the padding to extend more towards the toes, so should a moccasin design be looked at? It would provide padding from the toes to the full top of the foot, while at the same time providing support lengthwise that would keep it on the foot when pulling out of a foot restraint or padded HR, a great start, thank you!”
- “I think that with improvements, I'd wear this every day. When they stayed in place, they were very comfortable.”

- These comments and others mean that we have the appropriate leather for friction, comfort and color. The padding thickness and material has been good for comfort. The shape on the foot is close to the right dimensions to cover the top of the foot for protection. The personalized logos were appreciated.
- All four crew members felt that it would be good to have them as an option for crew but not everyone would want or need them.
- These comments do not yet mean that HUNCH will be making more of these as the other crew members need to provide comments as well. It does suggest that HUNCH will get another attempt at making improvements. This will probably go back to one or two sewing teams for the improved Footpads.