

# Brace yourself: Engineer giving animals a leg up toward mobility

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Derrick Campana kneels beside Angel Marie, a pony wearing a prosthetic leg, in Sterling, Virginia. Photo by: Kevin Lamarque/Reuters

The first thing you notice about Derrick Campana's workshop is the machinery. He's got ovens, sewing machines and vacuum tubes lining the walls. It's hard to know exactly what he makes – until you catch sight of the dusty paw prints.

Campana and his team use the tools to build prosthetic and orthotic devices for animals.

## "This Is Just The Best Job Ever"

Campana, one of the world's leading experts in animal orthotics, is on a mission to give disabled pets and farm animals options for more mobile lives. He builds braces and replacement limbs so the animals can get around.

"This is just the best job ever," Campana, president and CEO of Animal Orthocare in Sterling, Virginia, said, standing by a dozen plaster molds waiting at his workstation. "I went to school for human prosthetics and orthotics, but I always loved animals. So, to be able to combine both passions is just a dream come true."

Campana made the jump to the animal field 12 years ago when few, if any, people created artificial limbs for dogs and other pets.

"A veterinarian came to my office and she brought a dog that needed a prosthesis. At the time, it was so strange to me that someone would even do that," he said. "I gave it a shot, and it was successful. And a light bulb went off, and I said, 'Let's start a business.'"

### **Has Treated More Than 10,000 In Past 10 Years**

Campana figured there must be thousands of animals in need of these types of services. Over the past decade, Campana estimates he has treated more than 10,000 patients. More than 90 percent have been dogs, but he has also worked with a range of farm and zoo animals, from goats in New Jersey to rams in Spain and eagles at a Busch Gardens theme park.

Two Asian elephants in Thailand, who lost front limbs in landmines, are among his largest patients. Campana proudly lifted the two massive casts of their damaged limbs to prove it.

"They were actually better than any patient I ever saw. They just held their legs out, and the trainers did such a good job. ... I was able to cast them pretty effectively," he said. "It took a lot longer than casting a dog, but we got it done."

### **Devices Cost Between \$500 to \$1,200 Depending On Job**

Made primarily from highly durable, medical grade plastic and foam, Campana's devices cost, on average, between \$500 and \$1,200. They are crafted on plaster molds made from limb casts sent in from owners, veterinarians and rehab facilities around the world. Some animals will require multiple sets of prosthetics as their bodies adjust to new alignments. Campana argues the effort is still a viable alternative to costly surgeries or euthanasia.

Still, he cannot help every patient, no matter how much their owners might press for a solution to their pet's mobility challenges.

"That's the hardest part in the field. If the amputation on the front leg is at the elbow or higher, I can't make a prosthesis that is safe and functional. People beg me to do it, and I say, 'It's only going to hurt your animal, so I'm not going to do it. It'll do more harm than good.'"

### **Crafted A Brace And Prosthetic Limb For A Pony**

Angel Marie, a pony whose front legs were crushed by her mother at birth, was one of those tough calls. Campana ultimately crafted a brace and prosthetic limb for her.

"Whenever I look at a patient I ask, am I going to help or hinder their mobility or help or hinder their quality of life?" he said. "Angel Marie was really on the 50/50 scale for me, but the owners were adamant about trying something. Now, they say she can walk around the pasture and act like a normal pony."

Even when successful, Campana's work, especially with horses, does draw some criticism.

“I feel like the equine field is like what the canine was 15 years ago, where they just wanted to put animals down instead of trying to put on a device to extend their life,” Campana said. He argued the continued success of these cases is starting to change some people's minds. Indeed, Campana has noticed broader acceptance among veterinarians.

### **Plans 3-D Printed Prosthetics**

In the future, Campana plans to produce 3-D printed prosthetics, which, at the moment, cost more and are less durable. He also wants to make devices from low temperature thermoplastics that could be altered by owners at home with a hairdryer or other heating device. If an owner finds the prosthesis or brace is too thin and rubbing the wrong way, for instance, they could then heat it and slightly mold it into a more comfortable shape. When it cools, it becomes hard again.

But for now, he is just glad to help the animals he can.

“Seeing those dogs walk again, and their tails wag and their eyes glitter again, and it’s just the best feeling in the world, and it’s a job I’ll do until I die,” Campana said.

**Quiz**

- 1 With which of the following statements would Derrick Campana MOST LIKELY agree?
- (A) Dogs are the most difficult animals to fit for prosthetics.
  - (B) Prosthetics should become more user-friendly.
  - (C) It is always worthwhile to fit an animal with a prosthetic.
  - (D) The cost of prosthetics is reasonable and affordable.
- 2 According to the article, what is the BEST way to explain how Campana got involved with his current job?
- (A) Campana has always enjoyed building braces and replacement limbs. He came to the field naturally.
  - (B) Campana had always loved animals, but wanted to study orthotics. He ultimately decided he loved animals more.
  - (C) Campana went to school for human medicine, but was one day asked to treat a dog. He realized he enjoyed it.
  - (D) Campana particularly loves dogs and he went into this field to help them. He loves to see happy dogs.

- 3 Read the final sentence from the section "Plans 3-D Printed Prosthetics."

*"Seeing those dogs walk again, and their tails wag and their eyes glitter again, and it's just the best feeling in the world, and it's a job I'll do until I die," Campana said.*

How does this sentence fit into the article overall?

- (A) It refines the idea that Campana made a good decision to start his business.
- (B) It refines the idea that 3-D printing will help more dogs in the future.
- (C) It refines the idea that Campana thinks the prosthetics he uses are fine the way they are.
- (D) It refines the idea that dogs are the animals most likely to benefit from well-made prosthetics.

- 4 Review the selection from the section "Crafted A Brace And Prosthetic Limb For A Pony."

*"I feel like the equine field is like what the canine was 15 years ago, where they just wanted to put animals down instead of trying to put on a device to extend their life," Campana said.*

What does this selection accomplish?

- (A) It provides Campana's opinion to illustrate that people who work with animals are better informed than those who do not.
- (B) It provides a comparison that helps readers understand the difference between equine and canine prosthetics.
- (C) It provides a comparison to objectively help readers to understand why some people are critical of the field.
- (D) It provides Campana's opinion to persuade readers that critics of the field are outdated in their views.