"Tri-pawed": Canine Prosthesis

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The amputation of a thoracic limb, which is twice as likely as a hind limb due to the commonality of Osteosarcoma in large breeds, often leads to overuse of the shoulders and joints, resulting in chronic pain and loss of functionality and mobility. Because Osteosarcoma has the tendency to metastasize, though, amputation remains a reliable treatment option in order to prolong canine life. Thus, a versatile prosthesis which can be used on various canine breeds would simultaneously aid by providing hesitant owners with a plan to restore functionality after amputation and prevent future joint issues. A fiberglass prosthesis was constructed with the attempt to mimic the integrity of a carbon fiber running blade. Size was based off of a Canis latrans skeleton, due to the commonality of Osteosarcoma in large breeds, similar to this size. A kinetic model was constructed using 3D printed pieces and one of the fiberglass blades in order to demonstrate how this prosthesis may affect the locomotion of a canine. Experimentation consisted of testing the compressive strength of the fiberglass blade and then comparing this theoretical breaking point to the weight-bearing necessities of 6 breeds predisposed to Osteosarcoma. It was then determined that lighter breeds such as the Boxer, Labrador Retriever, or Weimaraner would fit the ideal nature of a breed who would make the most effective use of this type of prosthesis.

Awards Won: