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Summary:

The goal of our research is to investigate if 3D printed upper extremity prosthetics (UEP) can out-perform myoelectric and body-powered prosthetics in the scope of cost, weight, durability, and function for individuals with upper extremity amputations (UEA). A review of available research, literature, and clinical experiences relating to this topic is executed to answer this research question. In the scope of cost and weight, myoelectric prosthetics were found to be both the most expensive and heaviest. Body-powered prosthetics and then 3D printed prosthetics were less expensive and lighter for individuals with UEAs. In the scope of durability, body-powered prosthetics are more durable compared to the myoelectric and 3D printed prosthetics. Function was evaluated by measuring grip strength. Myoelectric prosthetics have greater grip strength than both body-powered and 3D printed prosthetics. However, there are easy modifications that can be made to 3D printed prosthetics to increase their grip strength. At this point in time, there is a deficit in the research surrounding 3D printed prosthetics, although the existing research indicates there are improvements can be made to increase the functional performance of 3D printed prosthetics.