

A Breakthrough Body-Powered Prosthetic Hand

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We have a schoolmate who cannot control his right hand fingers and wrist because of a brain disease. With the physical limitations, he can just move his elbow. Neither 3D printed prosthetic nor EMG- controlled prosthetic is suitable for him. About 1000 newborn babies in the USA have no hands or varying degrees of hand impairment every year. Based on the above reasons, we are trying to find possible means to help them. We aim to design a prosthetic hand of which the fingers could be controlled by the movement of the corresponding elbow. To take a mechanical grabbing arm and the tripod grip mechanism as the blueprint for our design. The practicality of this design is extremely high. It can allow users to manage most of the necessary movements in their daily life well, such as holding a pen, grabbing things or clamping the tableware. This grabbing arm has surpassed other prosthetic hands with its practical functions and low cost. With a production cost of 50 dollars, our product is even comparable to those expensive prosthetic hands that cost more than ten thousand dollars. This work has passed the tests of finger grip force and load-bearing capacity. The greatest finger grip force is 8.6N, about 71% of our average strength while the greatest load-bearing capacity is 3.1kg. We have also helped our schoolmate achieve his first right-hand movement. That very encouraging experience allows us to understand the importance of giving and being caring.