A Comparitive Strength Analysis of an Artificial Monofilament Nylon Passive Fiber Muscle vs. a Linear Acuator

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I created an artificial muscle using monofilament fishing line. The muscle is heat sensitive, and by applying heat to the muscle, it contracts lifting weight. To make the muscle, a nylon monofilament line was put through the process of twist insertion, which created a coiled line. Nine lines were then threaded together using cotton, polyester, and steel thread. An electric current was then ran through the muscle causing the threads to heat and the muscle to contract. The muscle contraction replicates a linear actuation, thus the comparative strength analysis to a linear actuator. My results showed that on a gram to gram ratio the muscle is much stronger and cheaper. Even though this discovery was made only a year and a half ago and is still in its early ages of research it has proven to be just as efficient as a device that has had 76 years of development. This artificial muscle is 117 times stronger than a mammalian skeletal muscle and stronger than a commercial actuator. It proves to be cheaper and stronger, and with a multitude of real world applications, this simplistic muscle will be the muscle of the future.

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