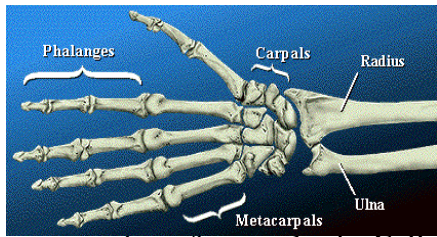


Andre Doyon  
BioMed Seminar  
Hand Prosthetics



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construction of a prosthesis. Following World War I, where there were over 30,000 amputees, the government began funding for research and development in the field of prosthetics.

There is an immense challenge in engineering a bioprosthesis hand to replicate the complicated interaction among muscles, bone, specialized ligaments, and to also imitate the look and feel of a natural human hand. There are two types of prosthetics; Body-Powered and Myoelectric. Body-Powered is powered and controlled by gross body movements usually of shoulder, upper arm, or chest. It is captured by a harness system attached to cable connected terminal device (hook or hand). Myoelectric uses electrical signals generated by muscle contraction as control input prosthesis controller. Transmitting electrical activity the surface electrodes on limb muscles detect to the electric motor. I focused my presentation around products from TRS Inc. The company was formed in 1979 by upper limb amputee Bob Radocy who was frustrated by the limited performance of commercially available prosthetic devices. In 1977, while in

grad school, he applied his engineering and biological sciences education along with his design experience to create a high performance prehensor. Since then, TRS Inc. has become the leading innovator of body-powered prosthetic devices in the world. They produce products for adults, children, and infants, as well as products for sports and recreational purposes. The sports fields range from aerobics, baseball, basketball, bicycling, to weight lifting.



There are also products for recreational purposes such as musical instruments, photography, and pool/billiards.

- **References:** 1) **Upper-Extremity Prosthetics: Considerations and Designs for Sports and Recreation** - Bob Radocy, *Clinical Prosthetics and Orthotics, Vol 11, No. 3, pp131-153, 1987*
- 2) **Pumping Iron With Upper Limb Amputations** - Bob Radocy and William Beiswenger, *Palaestra, Vol 10, No. 3, 1994*
- <http://www.oandp.com/products/trs/>
- [http://biomed.brown.edu/Courses/BI108/BI108\\_2003\\_Groups/Hand\\_Prosthetics/stats.html](http://biomed.brown.edu/Courses/BI108/BI108_2003_Groups/Hand_Prosthetics/stats.html)
- 3) <http://www.vard.org/jour/01/38/4/weir384.htm>