ABSTRACT

Orthosis designers generally design prosthetic products as an alternative to supporting human anatomy in replacing the physical appearance and role of missing body parts. However, in its use, it is not uncommon to encounter problems in the product parts that interact directly with the user's body, causing discomfort and irritation. The *socket* part is often questioned by users of prosthetic products considering that this part is responsible for direct contact with the highest frequency to users.

Concerning the problem in the *socket*, its design will be improvised by reviewing the anatomy and physiology of the patient's arm to support the geometric and functional aspects. This research will involve an analysis of the interactions and mechanisms of the prosthetic arm product on its users. With the reverse engineering method, the redesign process will utilize the SolidWorks 2022 software and review the interaction of product parts with humans by carrying out a series of product usage conditions tests.

The result of the repaired design will contain CAD (computer-aided design) and technical information regarding product parts, materials used, and other product features, especially on the *socket*. The results of the plan will meet the rules of biomechanics on the arm without ignoring the aesthetics of the product.

Improvements in prosthetic arm products can provide benefits in improving the quality of life of amputees and maximizing the utilization of the product as well as the function of the arm in human anatomy. In addition, the research is also expected to be helpful in providing a broader view of information regarding the design of prosthetic arms and similar products in the future.

Keywords - prosthesis, transradial, reverse engineering, CAD