

ABSTRACT

Fractures or fractures can be defined as disconnection of bone tissue or neuromuscular damage caused by injury and trauma, of which 43.12% of fractures are present in the elbow area of the forearm, requiring cast immobilization with short arm cast types. Basically cast immobilization utilizes the plaster on the outside while for the inside utilizes a cast that serves as a buffer that can adapt to the user's hand contour, but using conventional cast immobilization causes 83.3% of patients to experience skin irritation such as red spots and itching caused by the use of wet casts. So it takes a short arm cast design that does not cause irritation without reducing the function of the cast itself. One part of the translation needs user is the process of determining the dimensions of the hand pattern. Using trial and error and additive manufacturing techniques to produce the appropriate dimensions. Where to produce short arm cast design dimensions that can be used by all samples, three primary parameters are the circumference of the arm, wrist circumference, and upper wrist circumference, with categories and indicators corresponding to the design dimension tolerance, in which the tolerance of the arm area is 5 mm and 2 mm hand area. Based on this research, 64 dimensional designs of short arm cast design fit were obtained in the combination process of each category and primary parameter parameter of the builder.

Keywords: Orthopedic cast, 3D scanner, 3D printed, Additive manufacturing, Short arm cast