Mapping the Body to Screen for Clinical Health Conditions and Athletic Prowess: Implications for Health Literacy and Athlete Identification

Joshua D. DEXHEIMER [1,2]
[1] University of Southern California, Division of Biokinesiology
and Physical Therapy, San Diego CA, USA;
[2] Styku LLC, Los Angeles CA, USA

Abstract

For centuries, scientists have used anthropometric techniques to measure and map the external dimensions and proportions of the human body. It has become evident that the shape of the body provides a map to its internal state and performance. For instance, measuring waist circumference to assess android obesity has revealed direct links to the development and risk of various chronic health conditions, including: cardiovascular disease, type II diabetes, and non-genetic cancers. Waist circumference is just one of many anthropometric parameters clinicians can use to non-invasively screen high risk individuals, enabling the implementation of timely preventative health interventions. On the other end of the spectrum, anthropometric measurements have been used to assess and predict sports performance. Limb lengths, girths, body composition, and various other metrics may be used as indicators of an athlete's physical capabilities allowing coaches, trainers, and sports scientists to evaluate an athlete's strengths and weaknesses for athlete identification, tailor training programs, and optimize athletic performance. The analysis of anthropometric data does far more than predict disease risk and human performance, it also empowers the patient or athlete with a better understanding of their overall health and athletic strengths. Thus, by providing an accurate and precise means to map and measure the body, patients and athletes may demonstrate an improvement in health and performance literacy. Artificial Intelligence (AI) has significantly enhanced the field of anthropometrics through the development of 3D Optical Imaging (3DO). Using 3DO, clinicians and coaches alike now have a non-invasive and efficient means to gain valuable insights into both clinical conditions and sports performance. Ultimately, this screening technology has further implications for improving health literacy and individual well-being as well as sports performance optimization.

Keywords: 3D Optical Imaging, Chronic Disease, Obesity, Diabetes, Athletic Performance, Sports, Health Literacy, Athlete Identification