

15th International Conference on
Orthopaedics, Arthroplasty and Arthroscopy

September 22, 2022 | Webinar

Received date: 23.06.2022 | Accepted date: 26.06.2022 | Published date: 22.09.2022

Comparison of kinematics using two 3D motion models in football

Ashish Kumar Goyal, Arnold G, and Nassir S

Artemis Hospitals, India

Background: One of the world's most popular sports is football otherwise known as soccer. There has been very limited research into the biomechanics of the non-dominant support leg which could provide a vital insight into lowering injury rates. Various models are used for 3D motion analysis. In an extensive literature search, there was no similar topic where research was done. It will be very interesting to will compare the kinematics part of the biomechanics of football using these two motion models Vicon PiG and CGM2.1.

Method and materials: It is a retrospective study. Data were analyzed for 14 volunteers in the final study. During the analysis, three events were marked in the trial which is 1st - Foot strike (Foot Contact), 2nd – Foot off (Ball kick), and 3rd – End of swing (Leg follow through). Joint angles of the lower limb ankle, knee, and hip were tested in all three directions X, Y, and Z.

Results: The fourteen participants were aged between 19 and 24, with the average age being 21 years old (SD 1.31), average height 178.2 cm (SD 6.6), and average mass 76.12 kg (8.25). Overall, on comparing the results of lower limb hip, knee, and ankle angles in all the three planes during the three events marked during the trial both the models Vicon PiG and CGM 2.1 are statistically different however clinical both are the same.

Discussion: There has been no similar study conducted in past, the results of our study are exclusive. Overall, there is no statistical difference between the two models but clinical both are similar. Hence, all the previous studies conducted using the Vicon Pig model are still valid.

Recent Publications

1. Apriantono, T., Nunome, H., Ikegami, Y., & Sano, S. (2006). The effect of muscle fatigue on instep kicking kinetics and kinematics in association football. *Journal of Sports Sciences*, 24, 951–960.
2. Asai, T., Carre, M., AkatsUKa, T., & Haake, S. (2002). The curve kick of a football I: Impact with the foot. *Sports Engineering*, 5, 183–192.
3. Asami, T., & Nolte, V. (1983). Analysis of powerful ball kicking. In H. Matsui & K. Kobayashi (Eds.), *Biomechanics VIII -B*. Champaign, IL: Human Kinetics. Barfield, W.

Biography

Ashish Kumar Goyal, Ex–Senior Registrar, Department of Orthopaedics and Joint Replacement Surgery, Indraprastha Apollo Hospitals, Sarita Vihar, New Delhi 110076, INDIA.

drgoyal41@gmail.com