**Computer Vision**

**Section 1**

**Project 7: Identification of lower extremity injuries from jump-landings videos: A Deep**

**Learning Approach**

**Our literature references:**

A Framework for Biomechanical Analysis of Jump Landings for Injury Risk Assessment

S Sharma, S Divakaran, T Kaya, C Taber, MS Raval - 2023 IEEE 28th Pacific Rim International

Symposium ..., 2023

<https://ahduni.edu.in/site/assets/files/6912/paper_38.pdf>

Other supplementary material:

● Hébert-Losier K, Hanzlíková I, Zheng C, Streeter L, Mayo M. The ‘DEEP’ Landing

Error Scoring System. Applied Sciences. 2020; 10(3):892.

<https://doi.org/10.3390/app10030892>

● Padua, D. A., Marshall, S. W., Boling, M. C., Thigpen, C. A., Garrett Jr, W. E., &

Beutler, A. I. (2009). The Landing Error Scoring System (LESS) is a valid and reliable

clinical assessment tool of jump-landing biomechanics: the JUMP-ACL study. The

American journal of sports medicine, 37(10), 1996-2002.

**Problem Statement**

Competitive sports demand rapid high-intensity movements requiring exceptional physical

fitness, stamina and flexibility. Prolonged high-intensity repetitive exercises and asymmetric

postures increase the risk of injuries in athletes [1]. This increased risk is attributed to altered or

reduced neuromuscular control during sports movements, leading to changes in lower limb joint

mechanics, including motions and loads [2]. Landing is one such frequent movement in a sport

like basketball.  
  
**Progress**  
  
So far, we have not finalized our approach, we have finished our literature survey and started scouting various deep learning architectures which would help us align with our goal of identifying lower extremity injuries.

Secondly, we have received the dataset for our project, which includes jump landing videos of athletes from the frontal and the sagittal (lateral) plane. The IC frame and the MKF (maximum knee flexion) are the frames of interest to us. Hence, we have looked for the methods to separate those frames of interest from the video dataset.

Lastly, we have to show visualizations of landing errors using annotated videos and hence we have started exploring Kinova for that part.