Hugo Hakem Meng BioE 23-24

The effect **of** the barbell position on the upper part of the back, hand spacing on this barbell and speed of the motion **on** the glenohumeral joint contact force **on** athlete performing back-squat

Your Name	Hugo Hakem
A	The barbell position on the upper part of the back, hand spacing on this barbell and speed of the motion
B	Glenohumeral / shoulder joint contact force
C	Athlete performing back-squat
Analysis Type	Static and Dynamic analysis
Relevance	I dislocated my shoulder 1 year ago while doing back-squat with somebody on my shoulder. I am therefore interested in understanding what led me to dislocate my shoulder in this exercise. For the sake of simplicity, I'd like to perform this study with a barbell instead of a person. Stability is therefore increased, and the conditions are thus different. It happens however that looking at some forum, athletes may feel discomforts in their shoulder while doing back squat with a barbell, leading to minor dislocation for people with an accrued instability. This project may therefore lead to characterize what is the best position for back squat to reduce shoulder joint contact force (that I have associated to shoulder joint instability). The choice of the following parameters: Barbell position on the upper back, hand spacing on the barbell, and speed of the motion; are based on the observation of my own training session, where it happens that when I vary these parameters, the discomfort in my shoulder is impacted.
Novelty	To my knowledge, no work has been done to quantify shoulders discomfort while doing back squat. It could be helpful for beginners as this project intend to provide guidelines to optimize posture.