

SYMCOMP 2023



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CHARACTERIZATION OF THE MOVEMENT ASSOCIATED WITH THE MANIPULATION OF A MICROTOME

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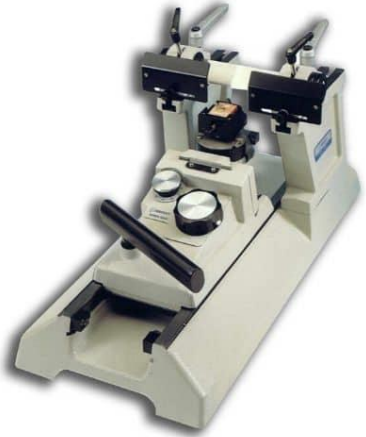
Motivation

Hystologic studies of human tissue need microscopic thickness' samples

Micromote

manipulation is of a repetitive motion

workplace injuries



Objectives

Characterization of the motion performed when using a microtome

- Capture motion of the arm
- Perform kinematic analysis
- Obtain trajectories, velocities, accelerations

Methods

- Capture of motion of the manipulation of a microtome
- Hybrid microtome:
Microm model HM200 ERGOSTAR
- Logitech C922 Pro Stream webcam (60 fps)

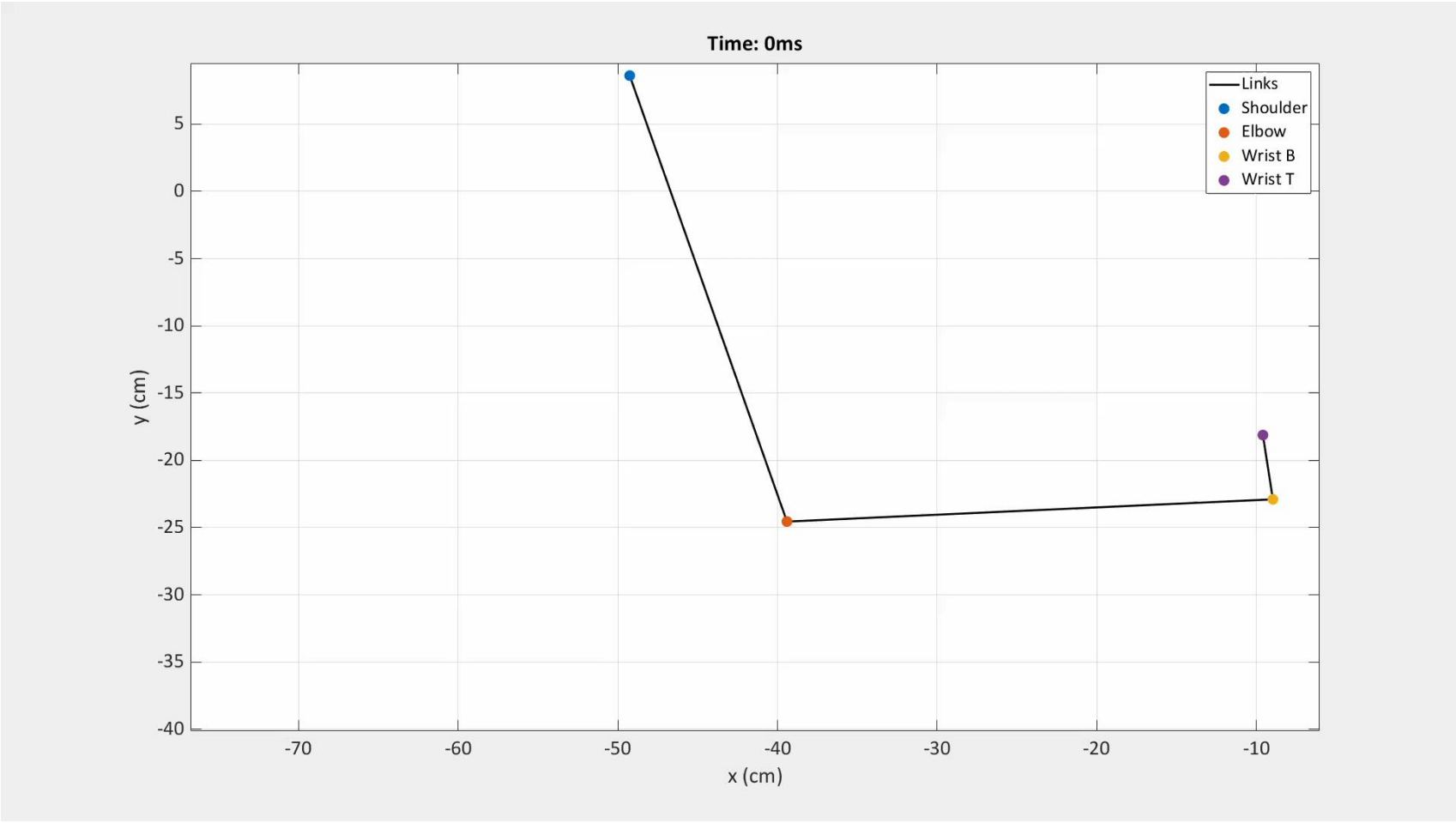


Methods

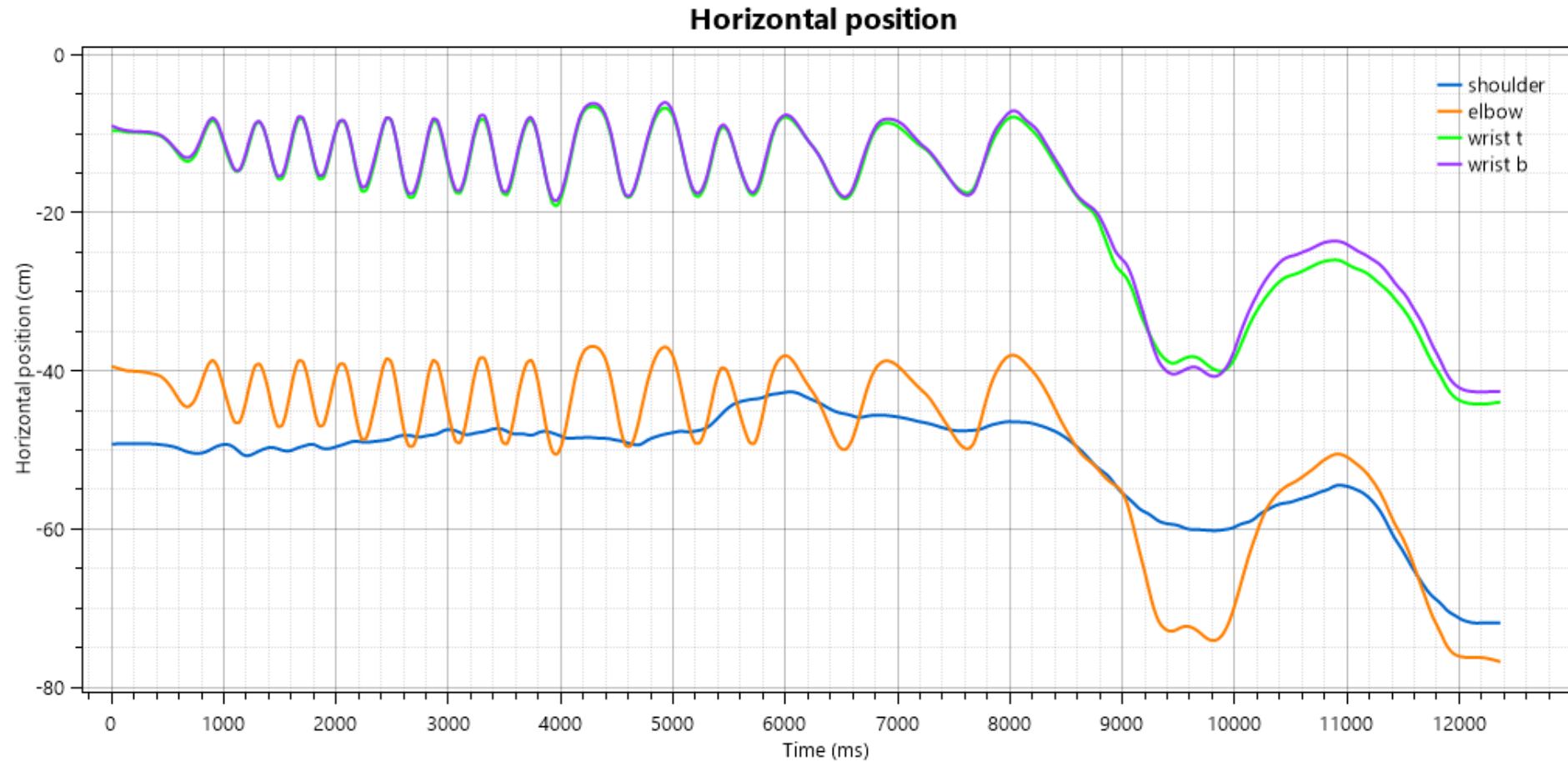
- Digitalization of anatomical points



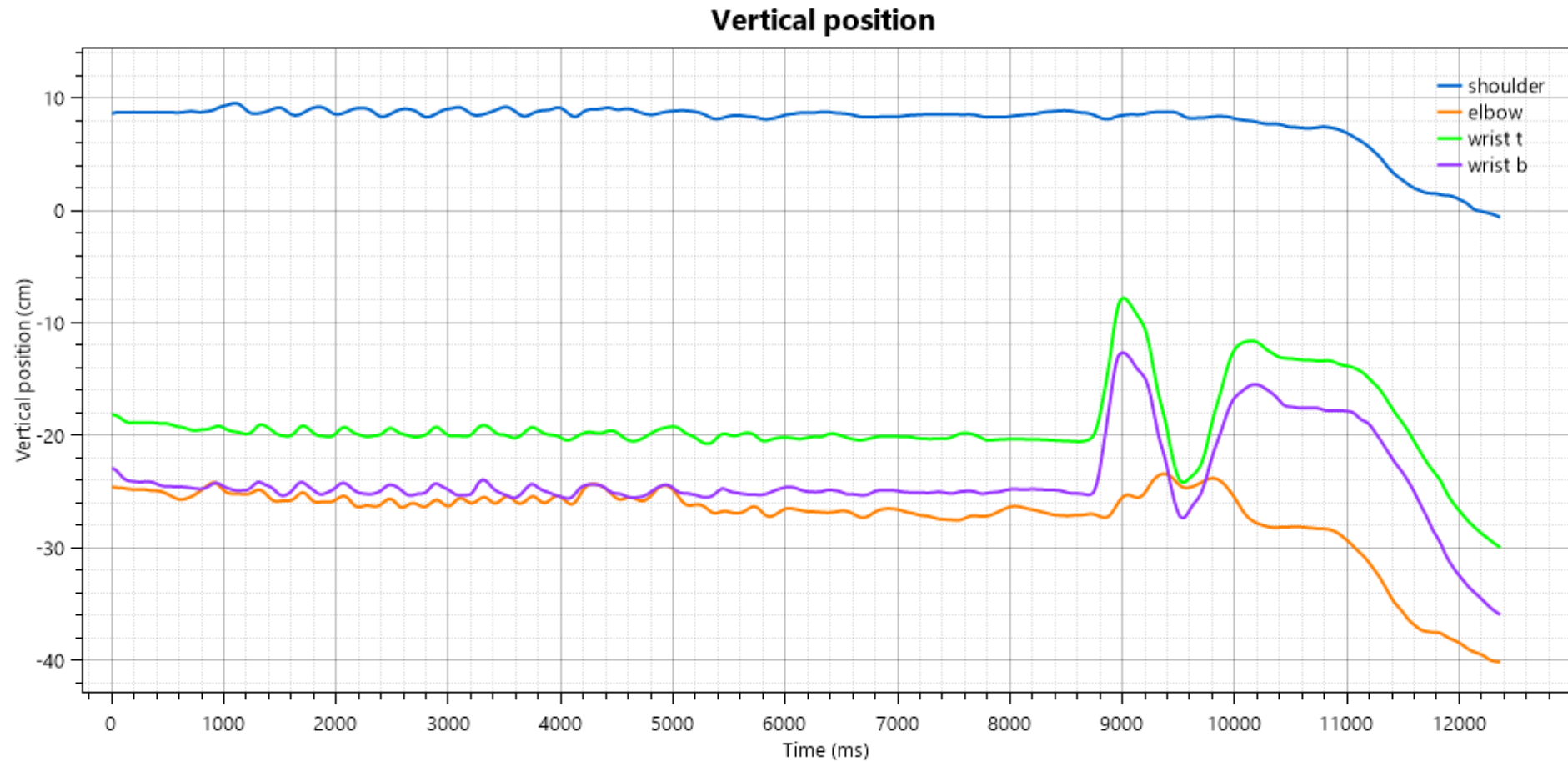
Results



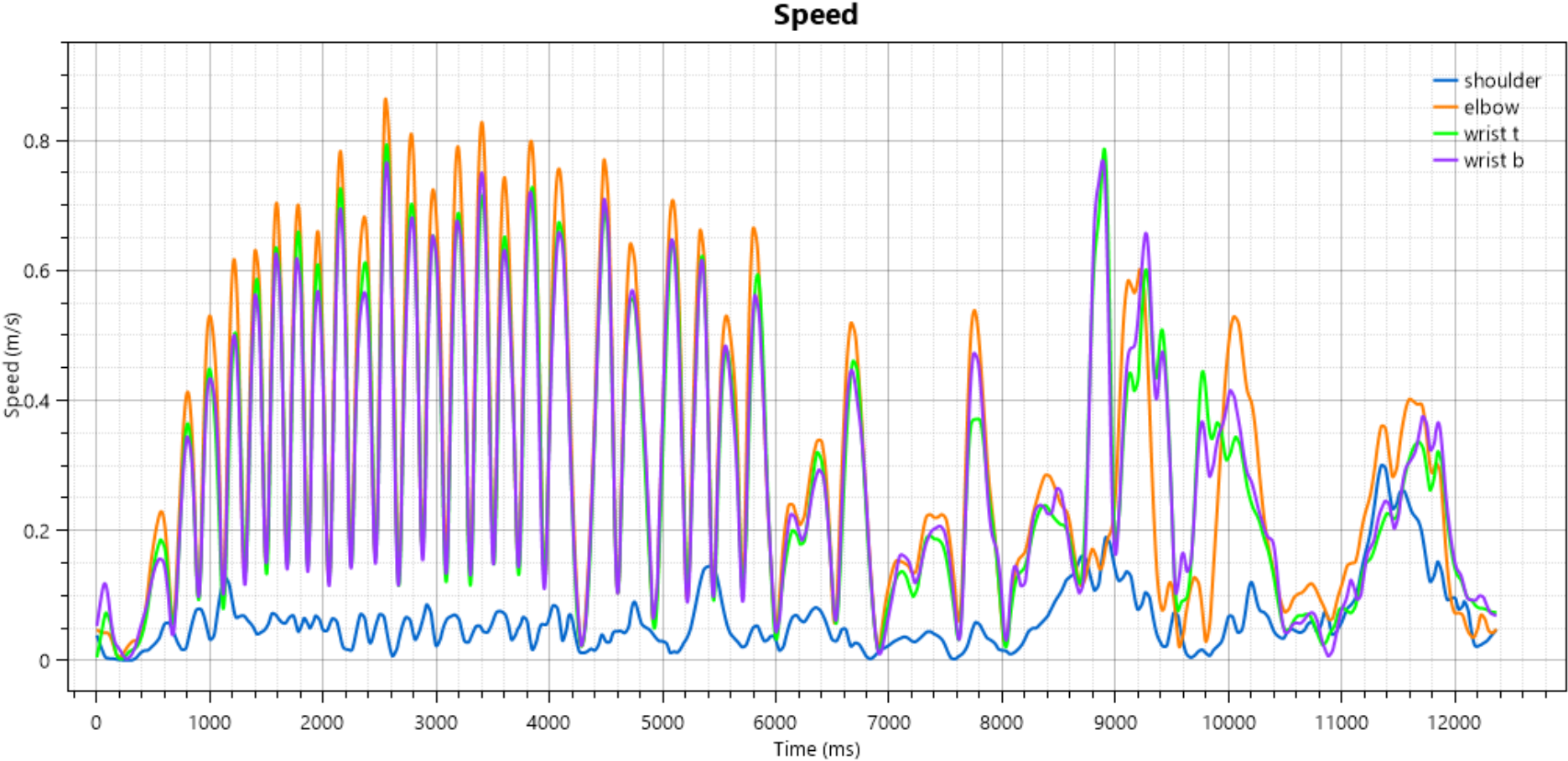
Results



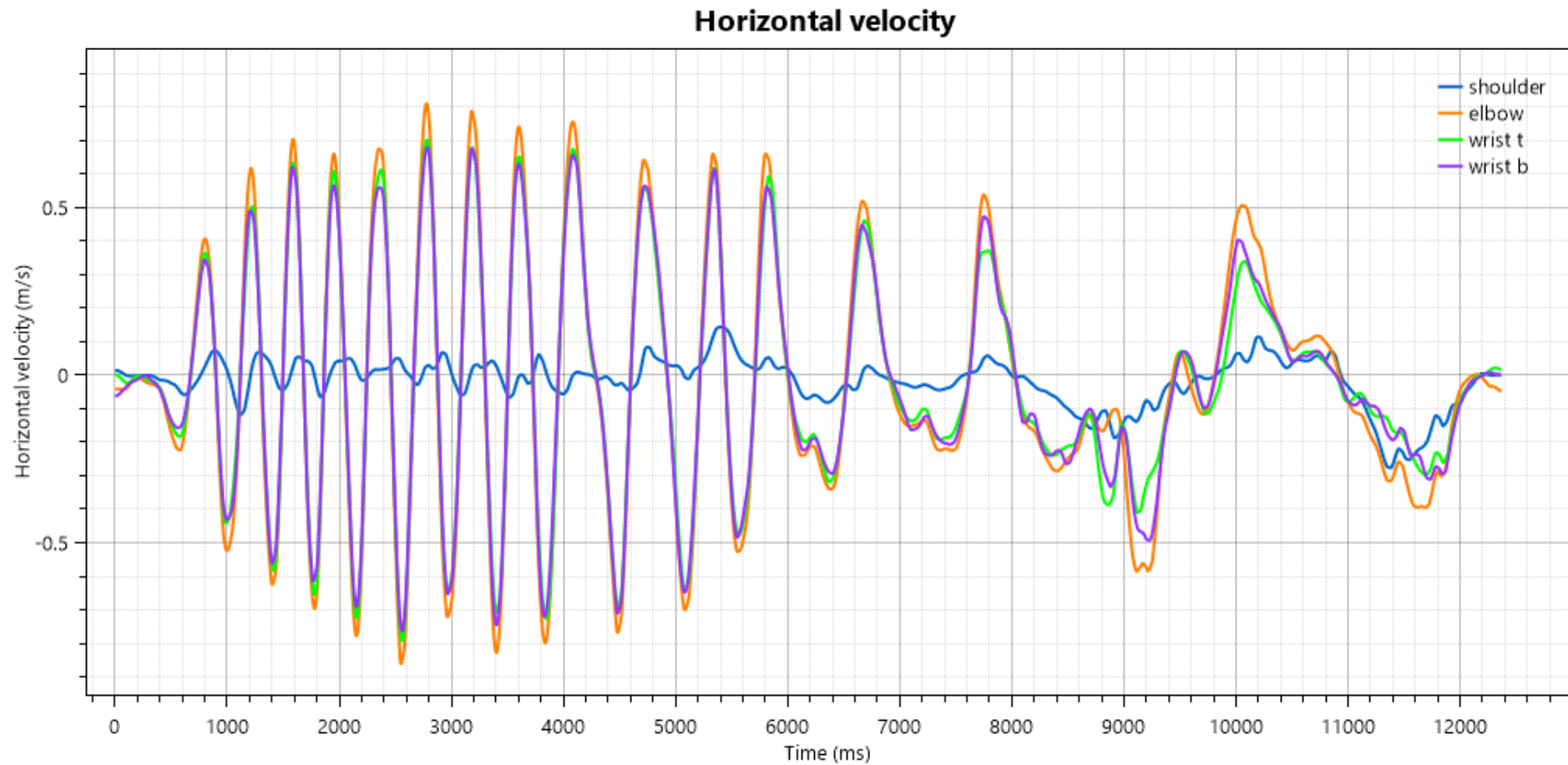
Results



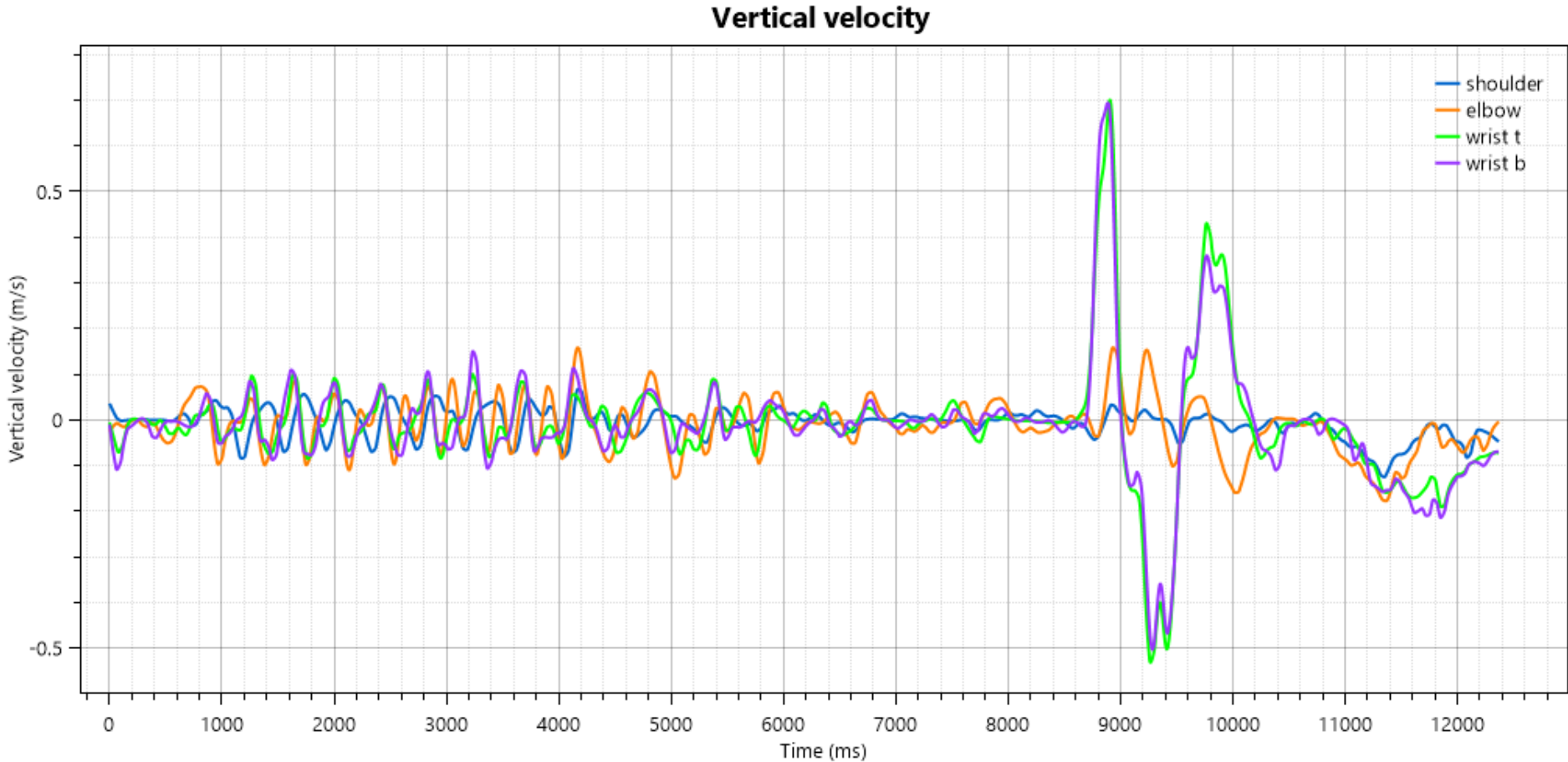
Results



Results

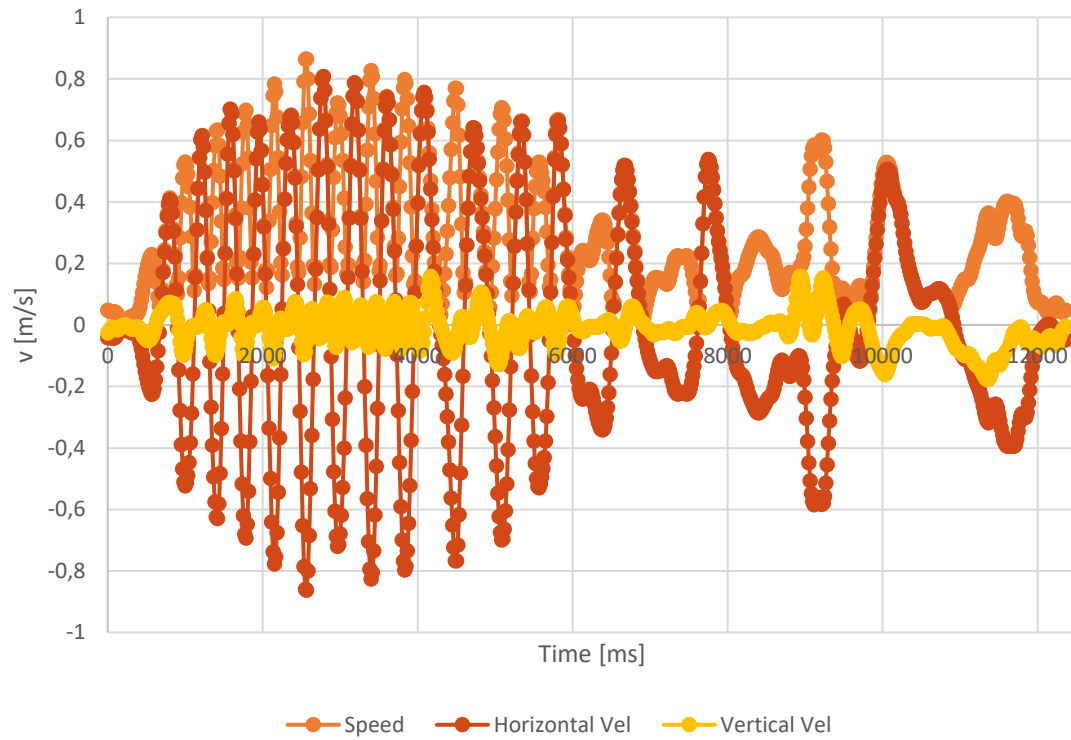


Results

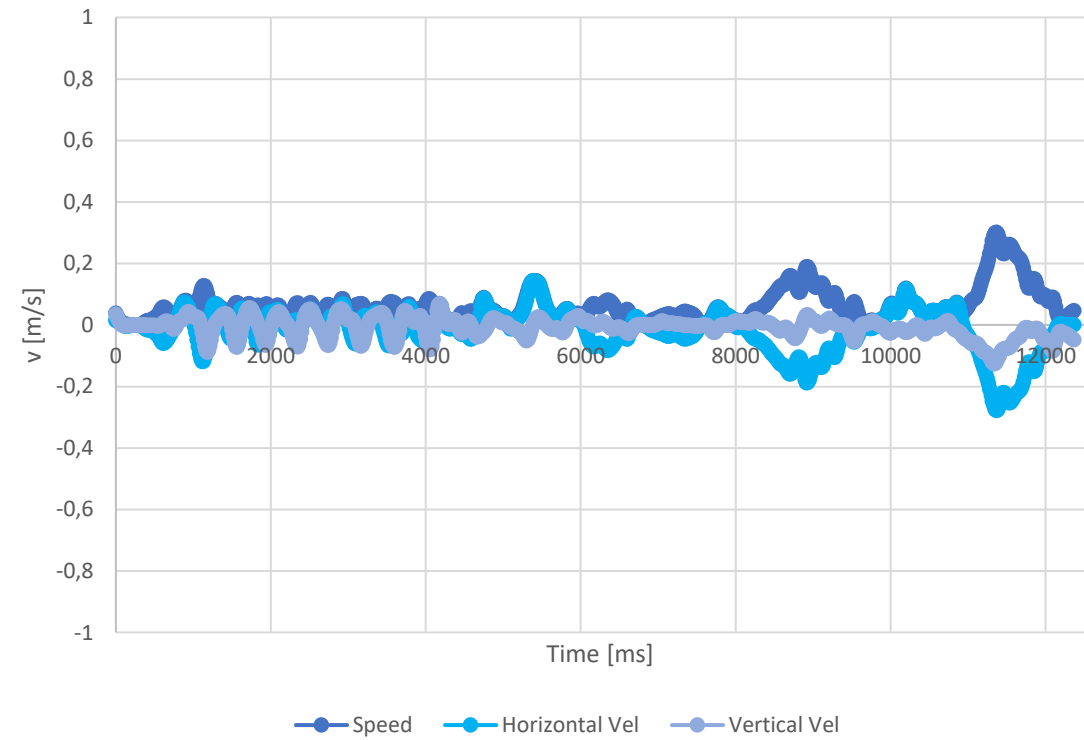


Results

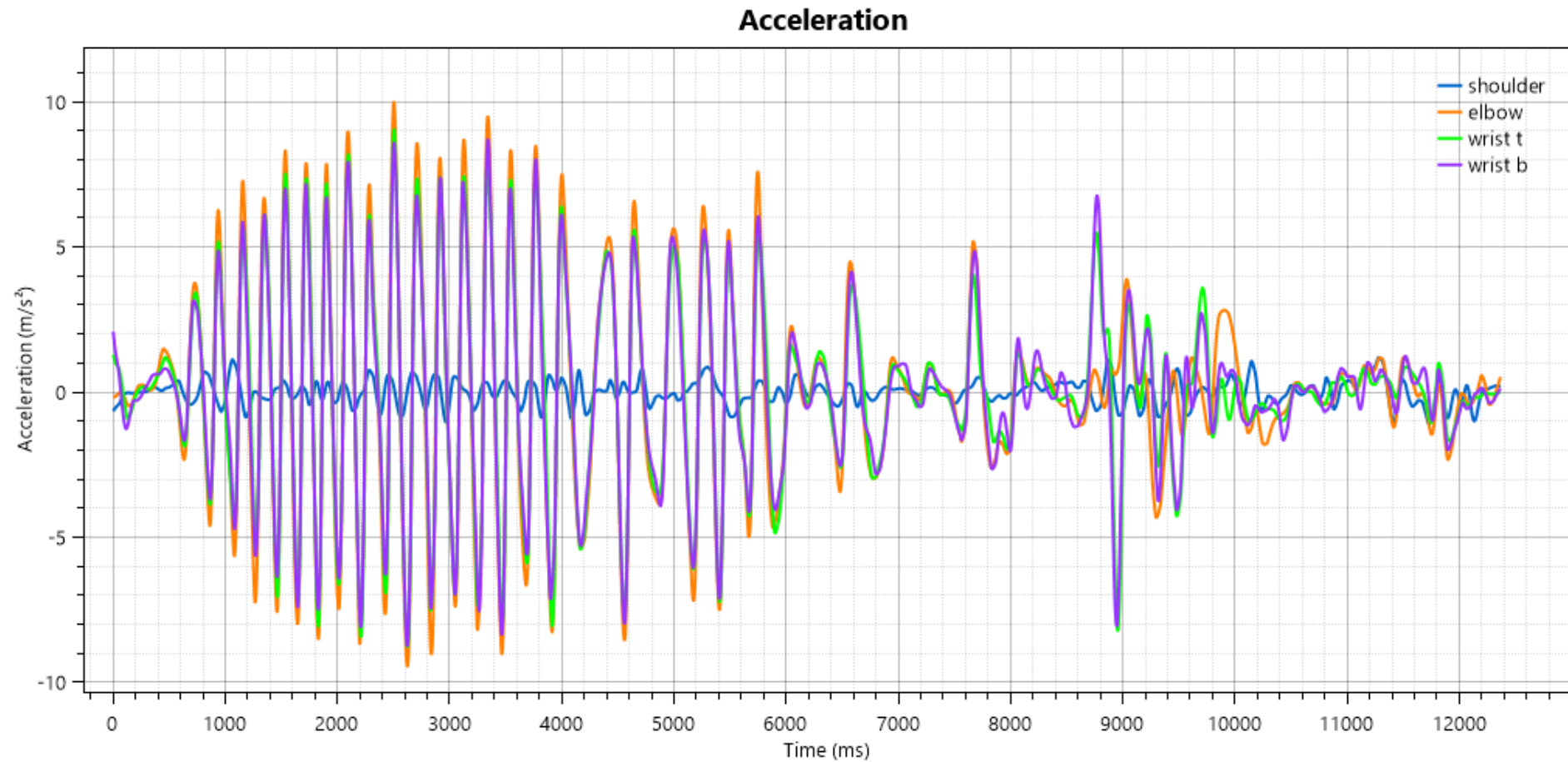
Elbow velocity



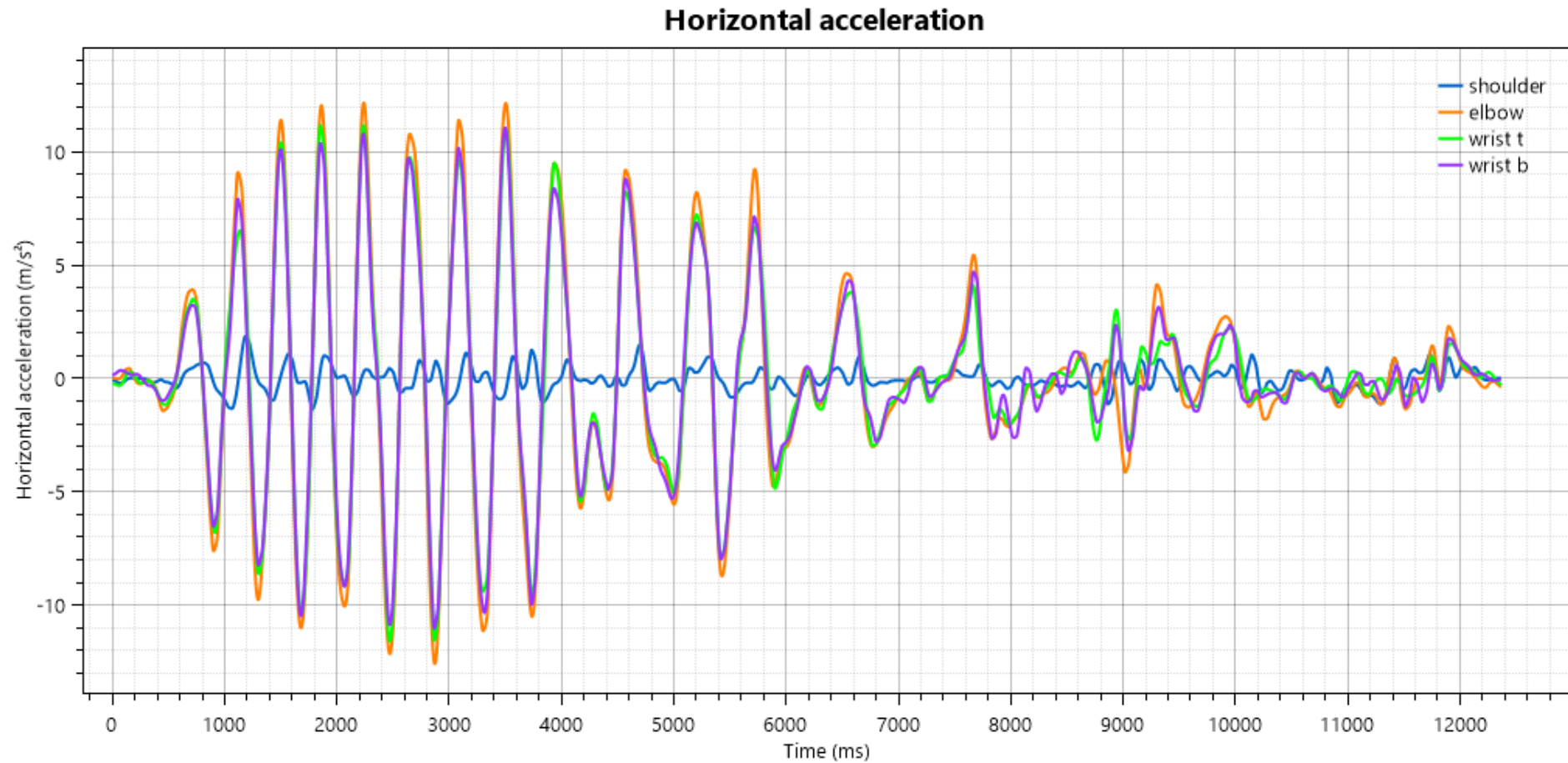
Shoulder velocity



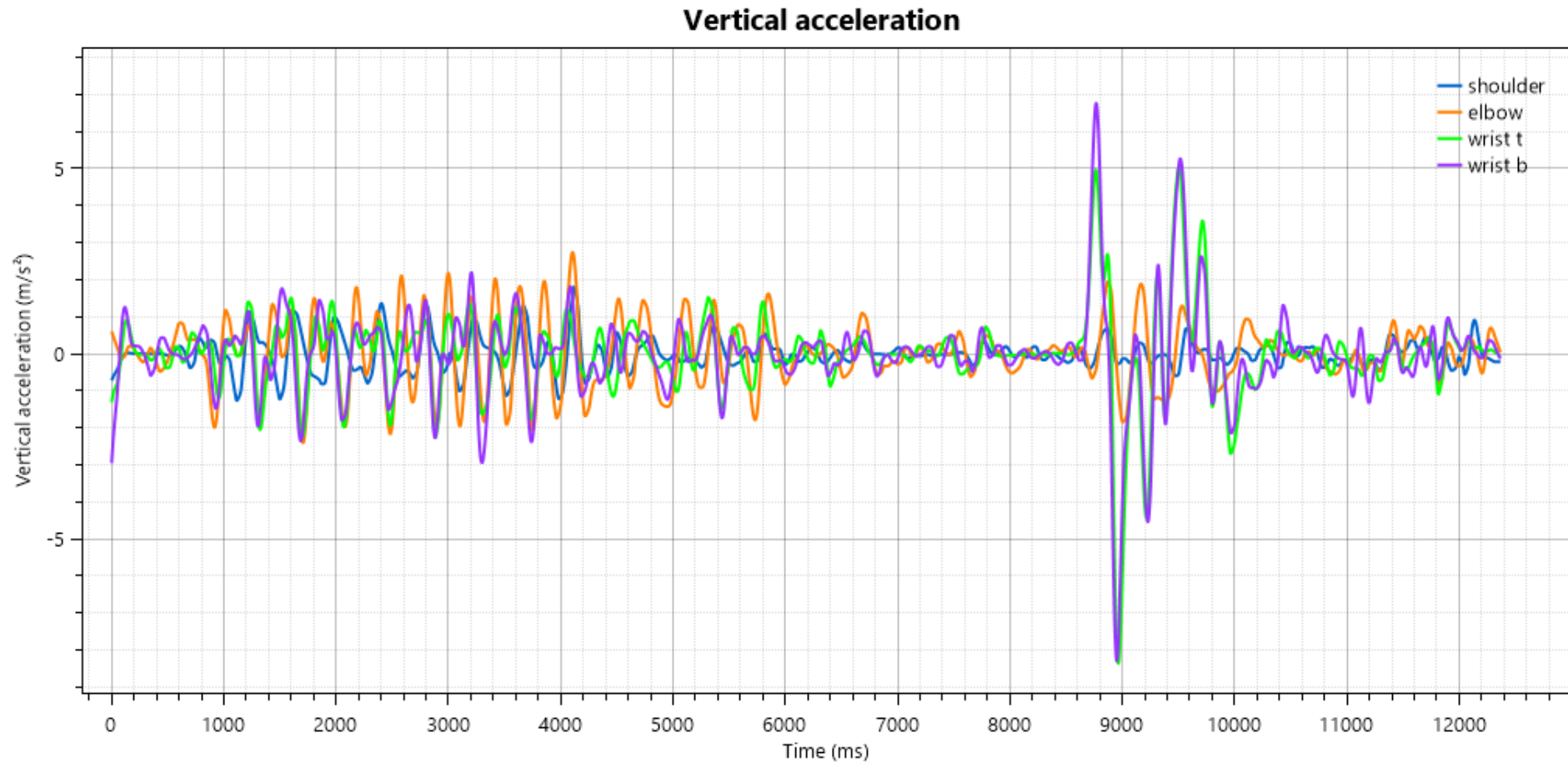
Results



Results

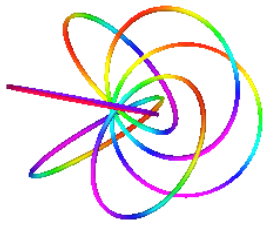


Results



Conclusions

- Microtome manipulation was captured in movie at a high frame rate
- Performed digitalization of anatomical points
- Obtained digitized motion
- Performed kinematic analyses
 - Velocity profile
 - Acceleration profile
- Repetitive motion introduces high horizontal velocities and accelerations to the elbow and wrist
- These may be related to injuries often associated with the task



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The authors would like to thank SAMS Hospital for the access to the laboratory.

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