

# Carmen Maria Gonzalez

*Portfolio*



Sport Scientist

# About me



- I'm passionate about the world, people, various diverse and creative topics, but I chose biomechanics to be my profession and main walk of life
- Originally coming from Jaen, Spain. In 2022 I graduated from one of Spain's top Sport Sciences universities – the University of Granada situated in the 14th 2023 Global Ranking of Sport Sciences Schools of Shanghai . Before settling down in Cologne, Germany to work on my master program of Human Technology in Sports and Medicine , I completed a personal trainer internships at “Global Training Center” in Granada.

# My timeline

2018 —————> 2022 —————> 2024  
2021

Erasmus at the  
University of  
Jyväskylä, Finland



Completion of Bachelor  
Degree in Sports Science &  
Physical Activity, University  
of Granada, Spain



Master Degree in Human Technology  
and Sports Medicine, German Sports  
university of Cologne, Germany



# Highlight projects



# Design of a new marathon shoe prototype to improve propulsion & energy return

**PLANT technology**

**EXPLOSIVE SEED DISPERSAL MECHANISM**

**CONCEPT SKETCH**

**WHAT IS THE PROBLEM?**

During the running race athletes want to run faster in order to achieve a personal best or compete against their opponents.

**SOLUTION**

MIMIC HOW THE CARDAMINE HIRSUTA BEHAVES

**ENERGY LOSS**

Therefore, improving performance is a priority. To do so we have to deal with ENERGY LOSS

- It uses an explosive mechanism to disperse its seed  
- This mechanism occurs rapidly at 3 m/s from start of rupture to full unravelling  
- The seeds travel at a maximum speed of 10 m/s and maximum distance of up to 2 meters

**THE REASONS FOR THIS GO FROM:**

- 1 Cushioning
- 2 Force transmission
- 3 Inadequate footwear

**BUSINESS MODEL**

**UNIQUE & EFFECTIVE PLANT TECH**

RECYCLABLE SUSTAINABLE TECH

revenue streams

product sales

LICENSING

**MAIN COMPETITORS**

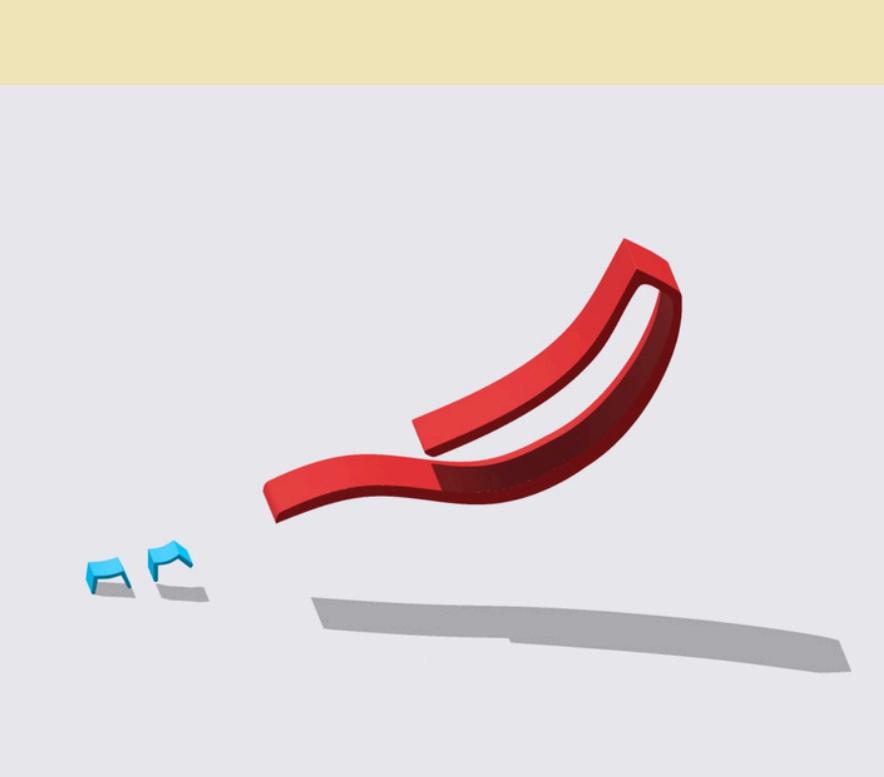
ASICS KAYANO, ADIDAS ULTRABOOST, BROOKS GHOST, NIKE VAPORFLY

**MARKET**

North America, Asia Pacific, Europe

**Product Sketch:** A hand-drawn sketch of a red and white striped running shoe.

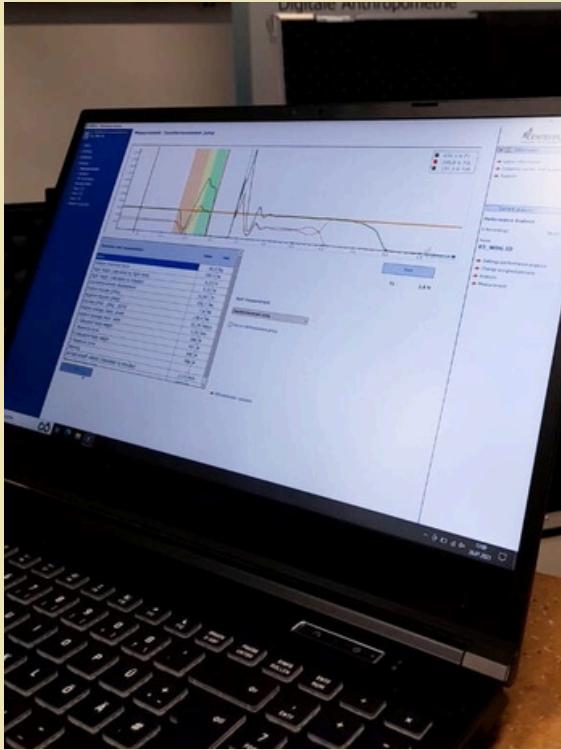
March 2023,  
Zurich, Swiss



ON Running



# Gait & Running Biomechanics Analysis in the 2023 World Dwarf Games



July 2023,  
Cologne,  
Germany



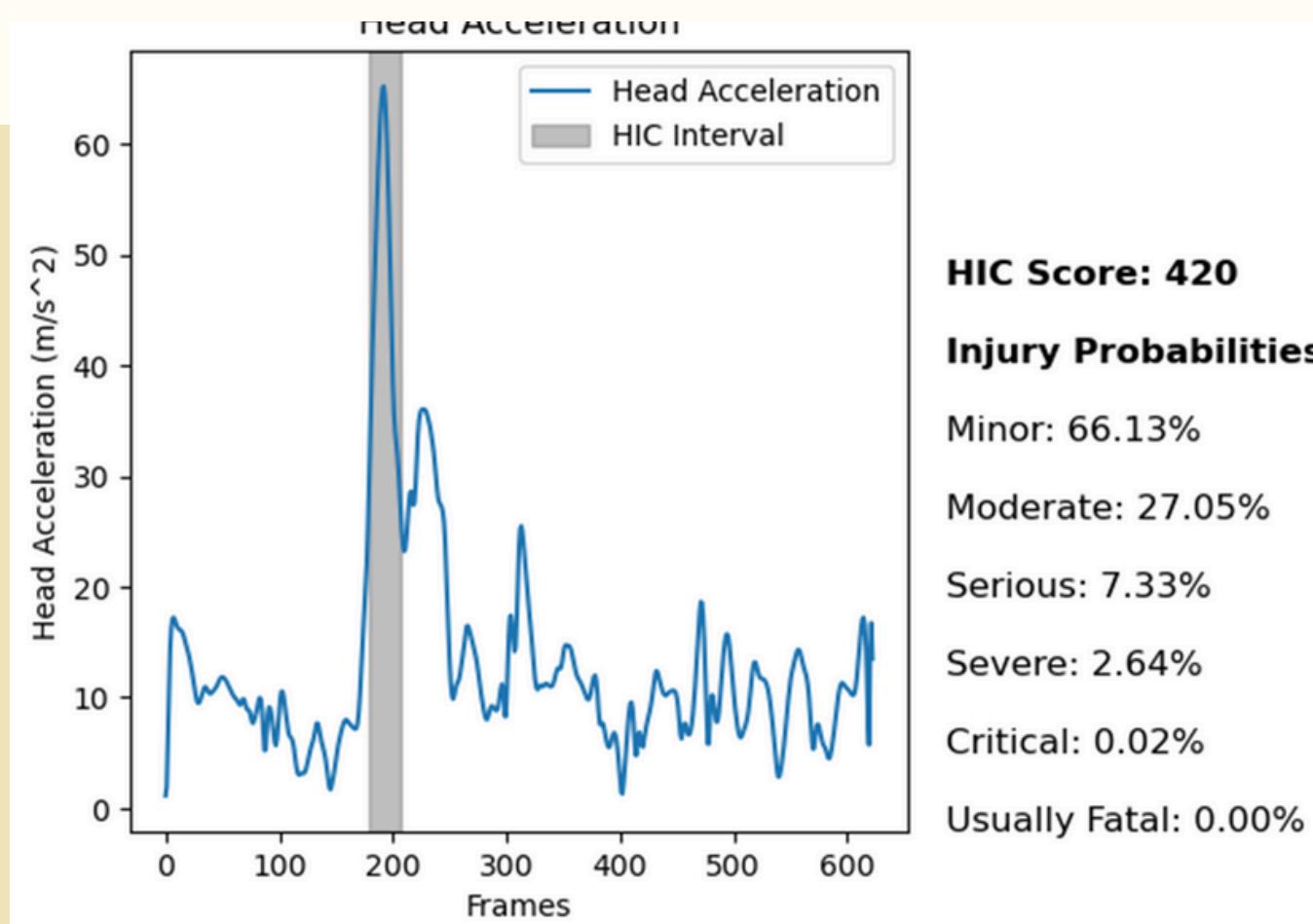
Deutsche  
Sporthochschule Köln  
German Sport University Cologne





*Master Thesis. Is there a correlation between Head Injury Criterion (HIC) and Effective Punch Mass (EPM) as a way of assessing performance during a real sparring situation in terms of impact dynamics?*

November 2023 -  
nowadays, Cologne,  
Germany



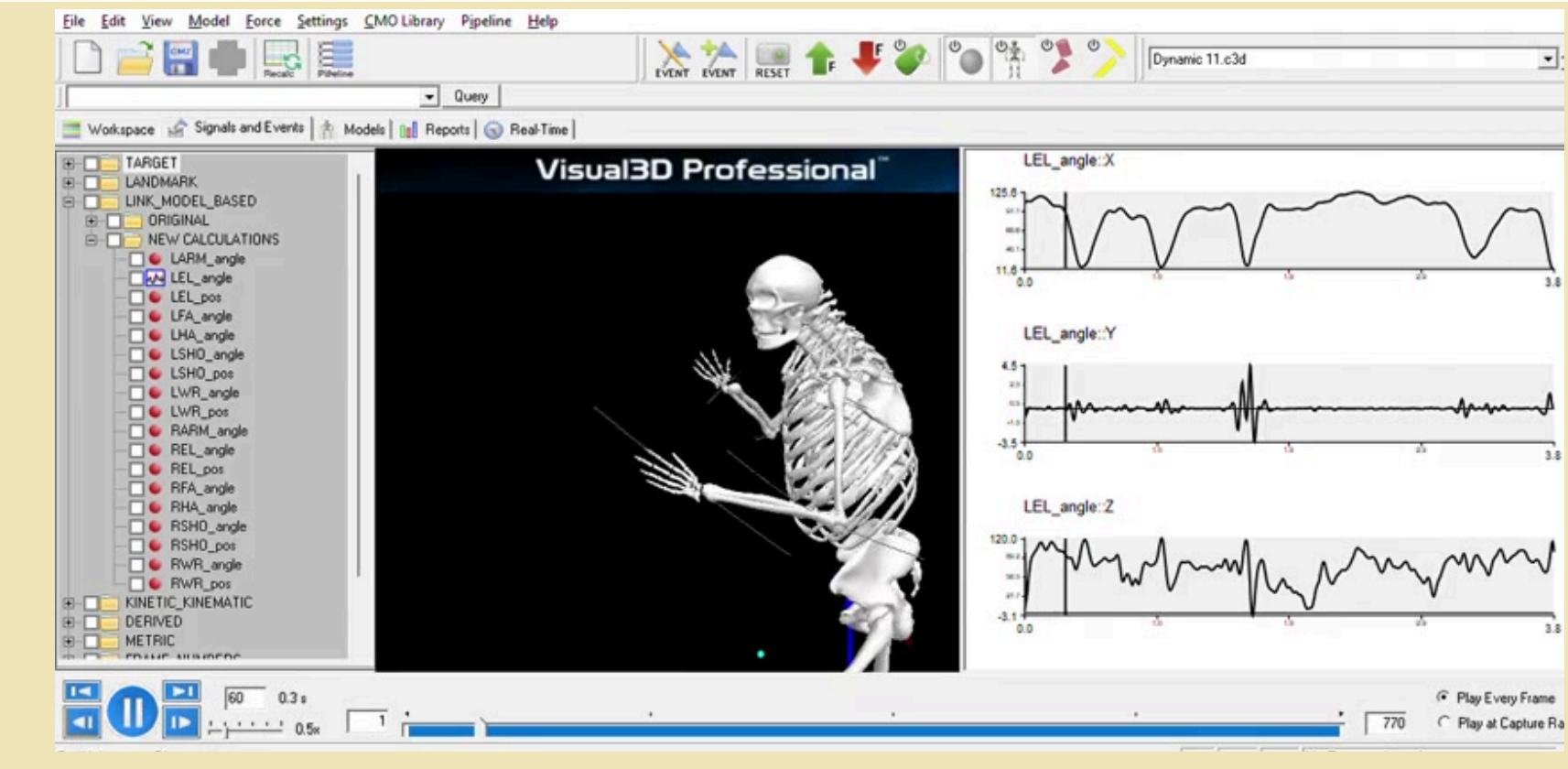


*Theia Markerless in combination with Visual 3D and Qualysis is used as a plus during my investigation to validate how accurate is the markerless system in comparison to the gold standard.*

November 2023 -  
nowadays, Cologne,  
Germany

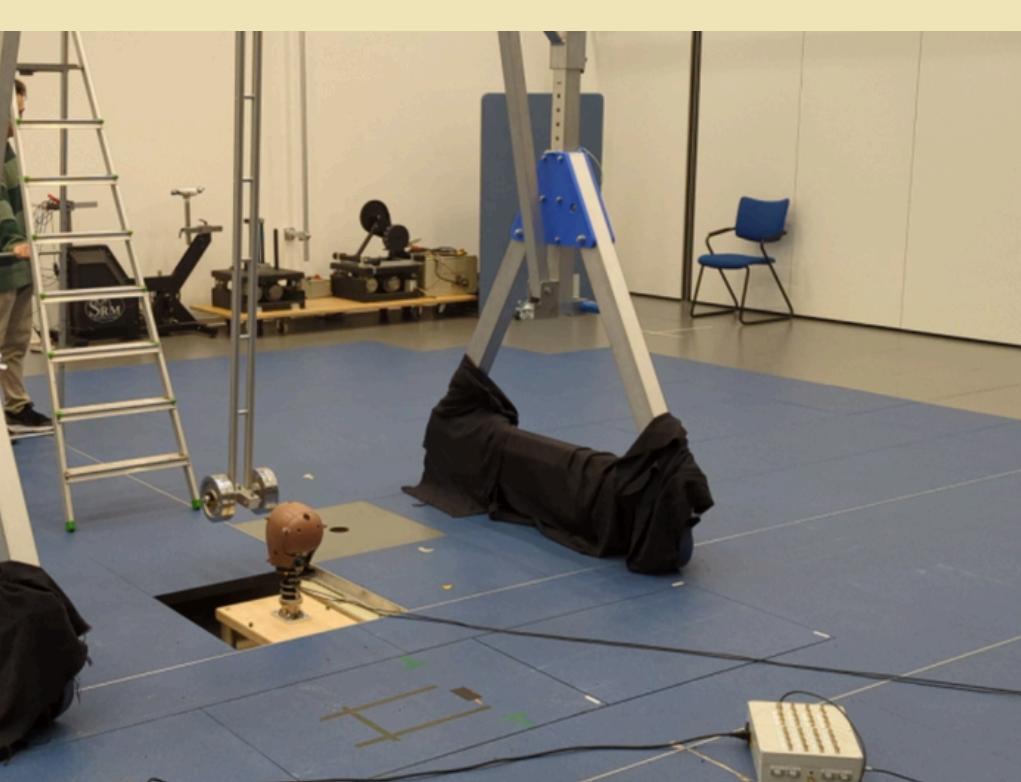
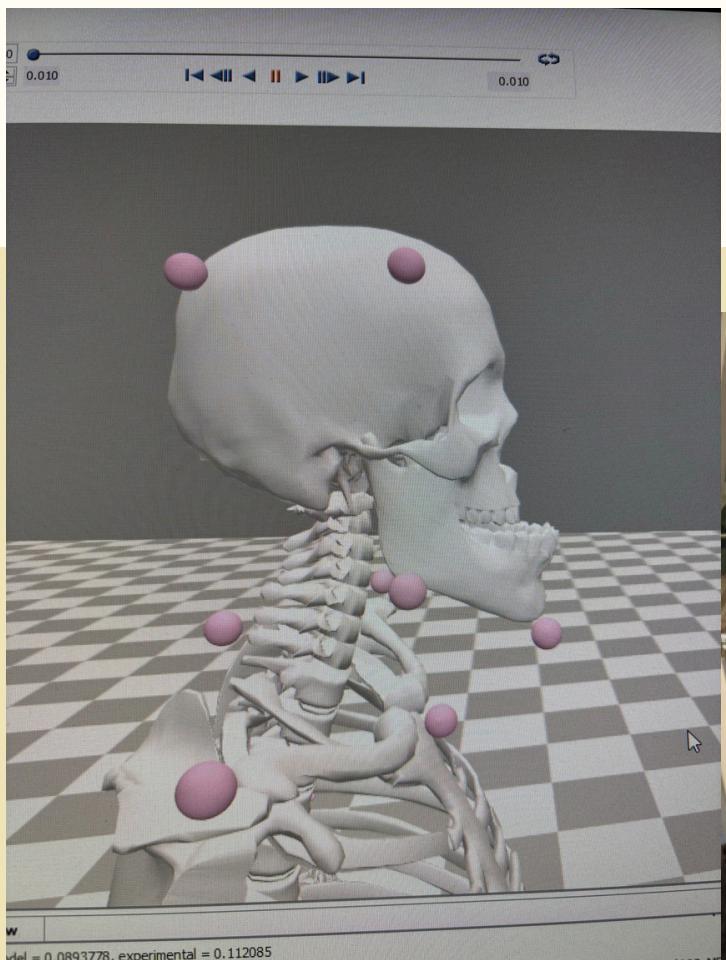


3D Motion capture  
(markerless)

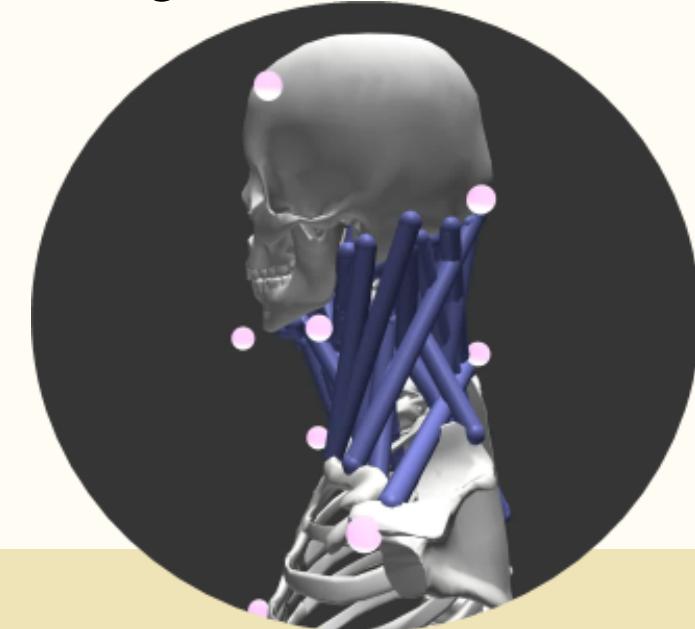




*Data from a dummy head and from kinematics. The measured force in the dummy wants to be compared with the estimated force from 3D kinematics. OpenSim was used in this phase of the study to model the head movement using the Hyoid model (including neck muscles).*



Deutsche  
Sporthochschule Köln  
German Sport University Cologne



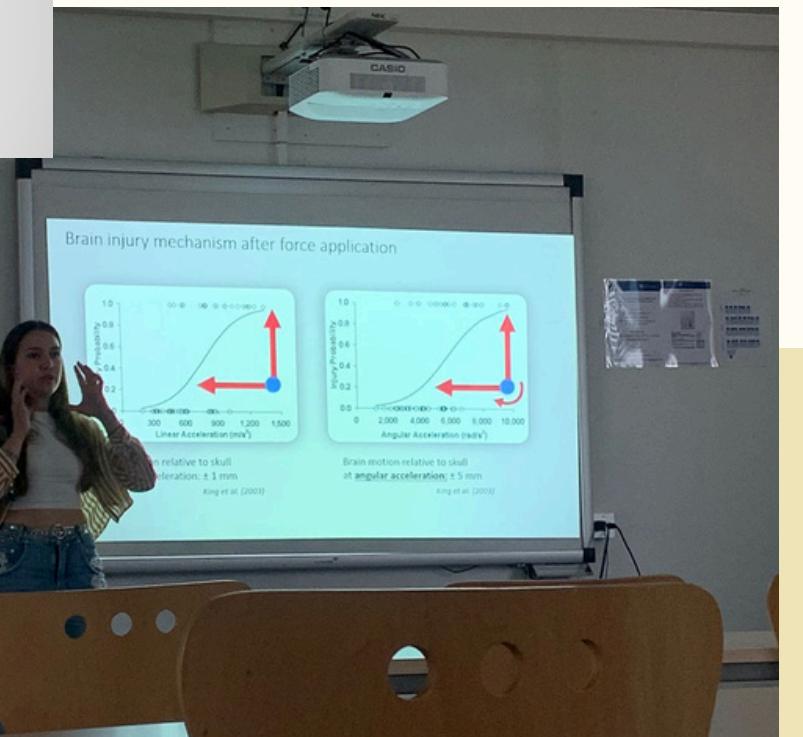
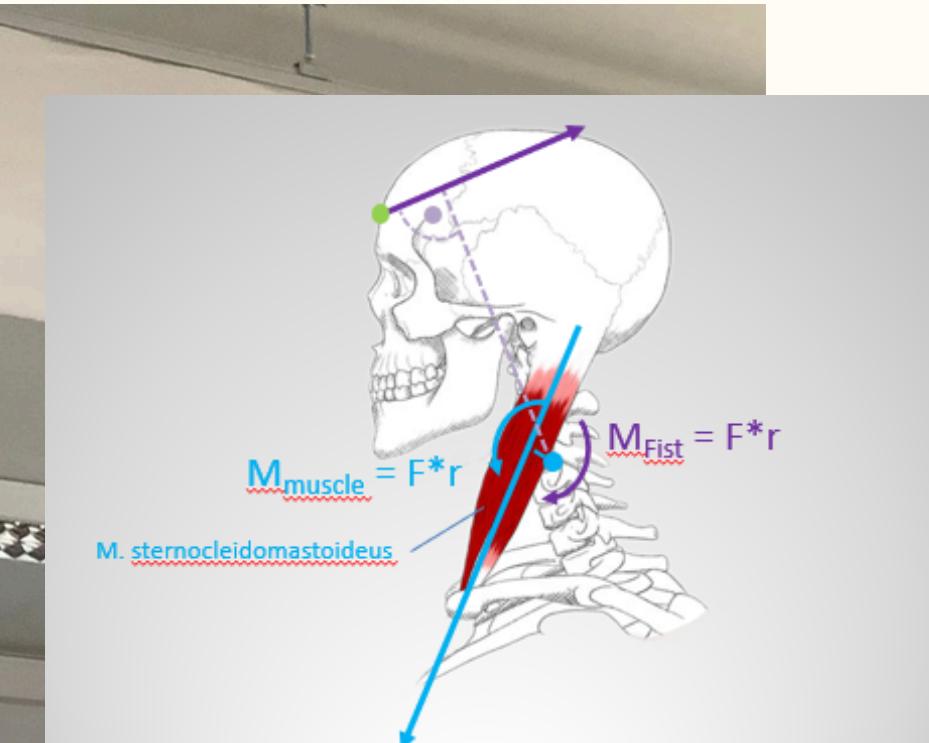
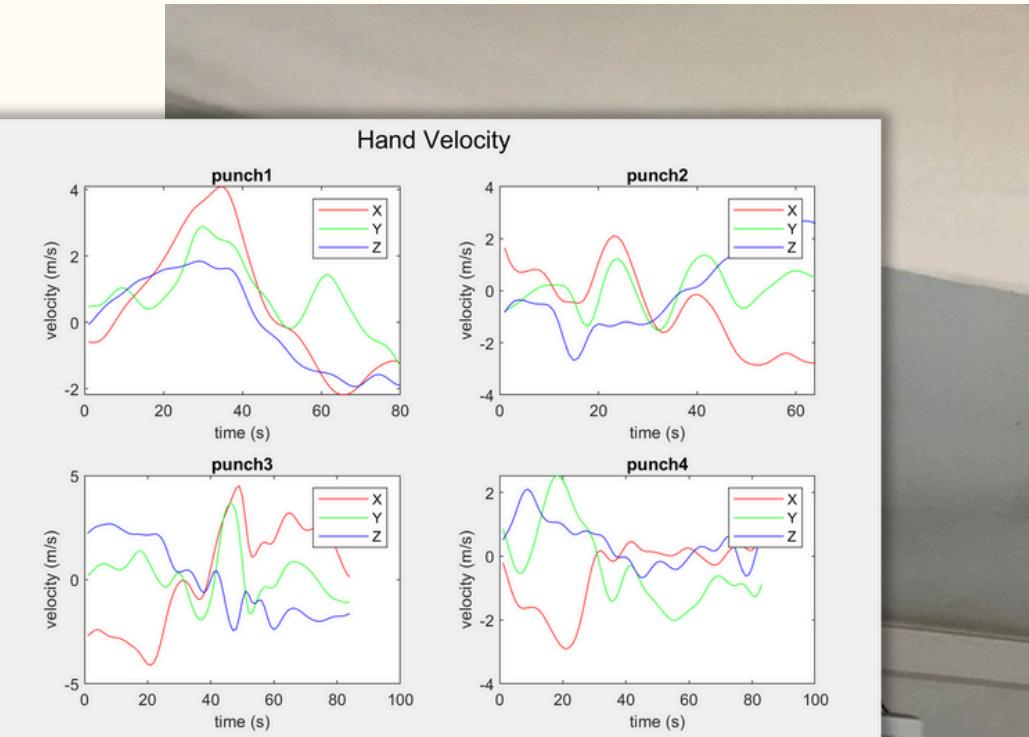
**GBA**

**GERMAN BOXING  
ASSOCIATION**

Amateur- und Kickboxen

# Teaching Experience 2024

# Master's Seminar. Biomechanics of Boxing



OLYMPIASTÜTZPUNKT  
NRW



Federal Ministry  
of Sport Science  
Bundesinstitut  
für Sportwissenschaft

# Highlighted Jobs 2024

•••

# Research Assistant in the project of “A methodological approach for simulating musculoskeletal loads in the head and neck region following boxing punches to the head”



Quantifying head impacts in boxing punches by using a crash test dummy, neuromusculoskeletal (NMS) models & more...



Deutsche  
Sporthochschule Köln  
German Sport University Cologne

Nov 2023 - Sept 2024 German  
Sports University of Cologne,  
Germany





# Remote Operator in first & second football division in Bundesliga, MLS, Eredivisie games



August 2023 - May  
2024 Cologne,  
Germany

Remotely tracking  
amazing football  
games, executing  
substitutions,  
assigning red  
cards and much  
more...



**TRACAB**



Volunteering in the Sports Sciences  
Congress ECSS 2022, Sevilla, Spain

## References

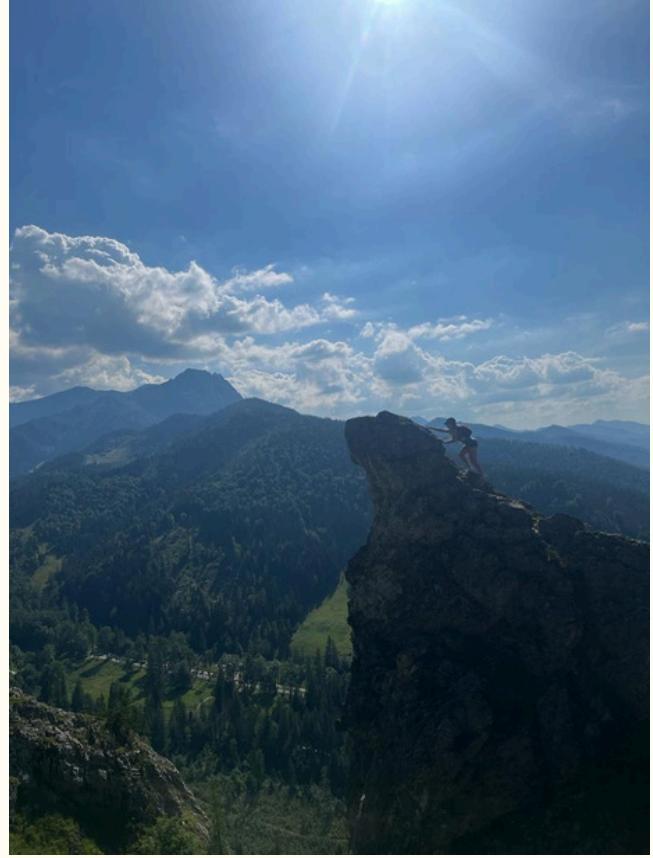
I am writing this letter of recommendation on behalf of Carmen González, student of Physical Activity and Sport at the University of Granada.

Carmen has excelled as a student in this school, due to his thoroughness and deep understanding of the subjects. Due to his diverse skills, he has achieved a good recognition in this institution.

I had the pleasure of tutoring Carmen through her entire Biomechanic research in my class. She has participated as a researcher in the sports biomechanics laboratory with the project: *Effect of the mass of the ball on the kinematics of the handball throw.*

Marcos Davila, Professor of Biomechanics,  
University of Granada

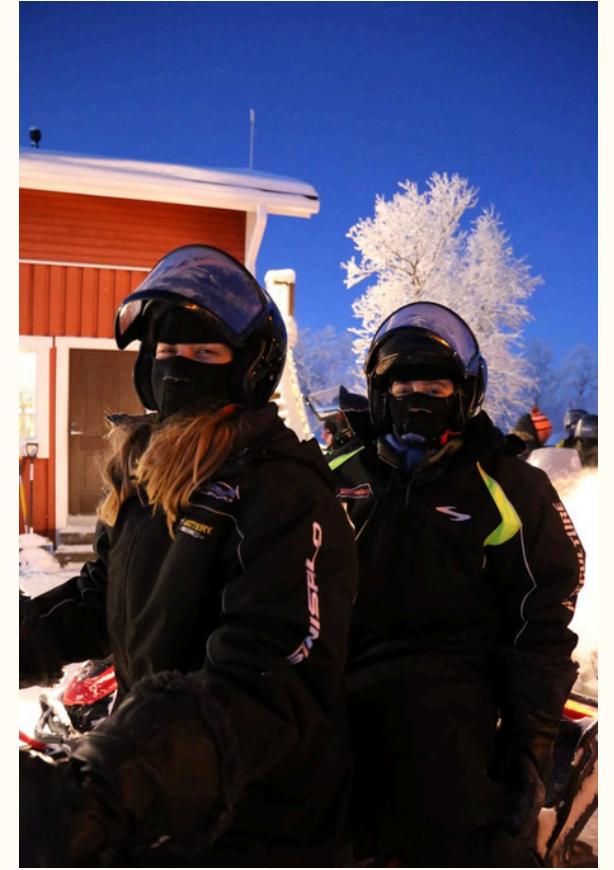
# Other projects



Zakopane mountains (Poland)



*First Place in Deutsche Hochschulmeister Judo Nacional Tournament 2023 (Konstanz, Germany)*



*Erasmus Program Bachelor's Degree in 2021 (Jyvaskyla, Finland)*



*Leading Empower Yourself Erasmus + Project in 2022 (Poland)*

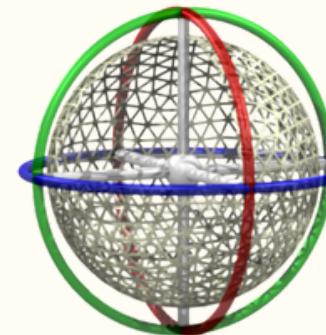


*Sustainable Development Erasmus + Project in 2022 (Denmark)*



# Mokka

Motion kinematic & kinetic analyzer



 **CONTEMPLAS**  
*professional motion analysis software*

**Visual  
3D**

 **kinovea**

## Programs

  
**OpenSim**



**KISTLER**  
measure. analyze. innovate.

**QUALISYS**  
Motion Capture Systems

# Languages



**Cambridge Assessment  
English**

## Certificate in Advanced English

### Statement of Results

Candidate name

**Carmen María González Ortega**

Place of entry

**ANDALUCIA**

Result

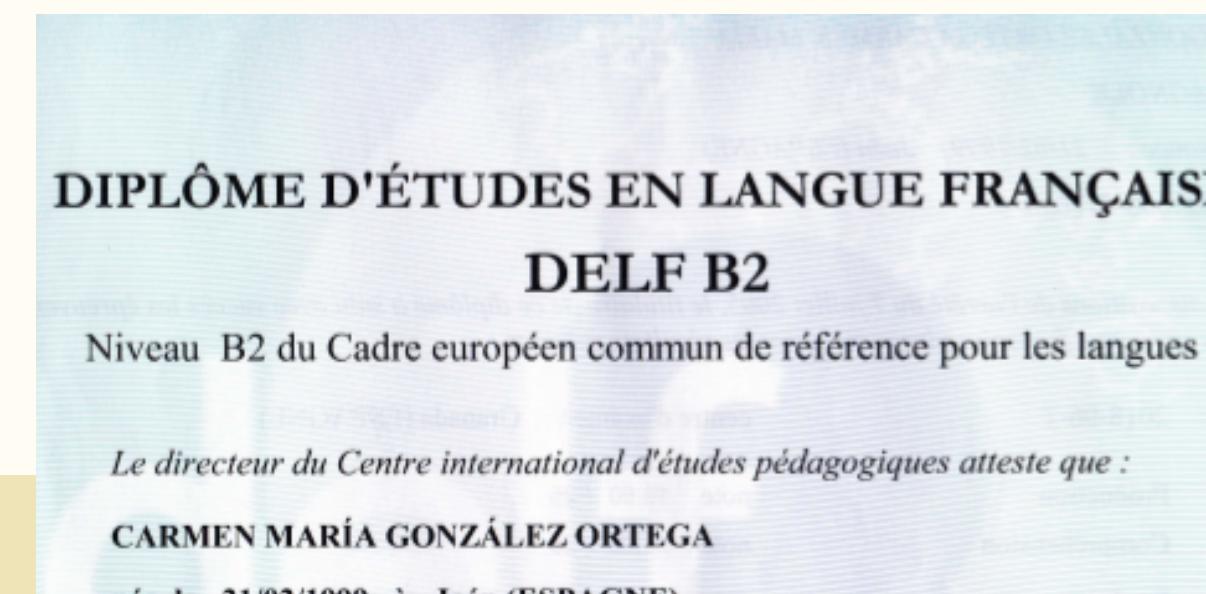
**Pass at Grade C**

Overall Score

**188**

CEFR Level

**C1**



**Native Spanish Level**



## Teilnahmebescheinigung/Certificate of Attendance

Frau [Ms./Mr.] Carmen Maria Gonzalez Ortega

hat bei der Volkshochschule Köln an der folgenden Veranstaltung regelmäßig\* teilgenommen:  
[has attended the following course at the Volkshochschule Köln on a regular basis\*:]

**A-422192 Deutsch Intensivkurs A1.2 und A2.1**



# Contact

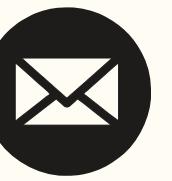
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