

ZORAVAR SINGH KALKAT MD

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I am a medical doctor with interests that range from software development to engineering and woodworking. My clinical training encompasses diverse specialties, including emergency medicine, traumatology, and bone infection. I have actively pursued additional training in areas such as fracture management and applications of AI in radiology. I also leverage my diverse interests in areas such as programming to aid in my research.

EXPERIENCES

Trauma Surgery Intern

2022 – Ongoing

Traumatoloģijas Ortopēdijas Slimnīca

Rīga, Latvia

(Rīga Traumatology and Orthopedics Hospital)

Voluntary position under the supervision of Dr. Igors Terjajevs (*MD and AO Faculty Representative*)

Responsibilities:

- Assisted in the preparation of patients for surgery, including supporting anaesthesiologists during induction.
- Sterilization of the operating field.
- Suturing surgical sites, and applying sterile wound dressing.
- Supported procedures such as osteosynthesis, and the removal of broken and infected hardware.
- Assisted in free and local flap procedures, and autodermoplasty.

Surgical Disciplines:

- Traumatology: FRI revision. Focus on lower extremity trauma (e.g. tibial plateau fractures, distal femur fractures, and minimally invasive ligament reconstruction).
- Septic and flap revisions: Involvement in microsurgical free flaps, local flaps, and revision surgeries for war-related injuries.

Key Insights:

- Y4: Participated in research project investigating metabolomic changes in patients with fracture related infections. Responsible for collecting and compiling patient data relevant to the study.
- Y3: Carried out simple procedures under direct surgeon supervision (such as gamma nail), participated in pre-op planning discussions. Developed a stronger understanding of the theoretical basis of varying treatment approaches, and weighing up the advantages and disadvantages.
- Y2: Learning more theory - fracture management course, attending seminars and workshops, using my now fairly refined skillset to prep the patient and operating table to the requirements of the operation, and scrubbing in early to clean the limb and prepare for the start of the surgery. Allowing the surgeon to scrub out earlier and dealing with suturing and wound dressing.
- Y1: Navigating the operating room, familiarizing myself with the administrative and surgical process, allowing for some independence (getting to ORs early/proactively helping in the pre-op). Developing my suturing skills, developing my skills as a surgeons assistant.

Researcher

2021 – Ongoing

Various Initiatives

- Sample management, and patient documentation under Good Clinical Practice guidelines for a bone metabolomics study carried out in conjunction with the Baltic Biomaterials Center of Excellence, and the AO Davos research institute. *Ongoing*
- Investigated the evolution of COVID-regulations throughout the pandemic as part of the ECOMSIR research collective. *Pending publication*
- Mapped the data sources used in medical research from a large cohort of medical publications as part of the ECOMSIR research collective. *Pending publication*

Event Medic

2022 – Ongoing

Various Organizations

- Provide first aid for at least 40 events to both adults and children, at a diverse range of events including concerts, film sets, motocross, horse riding, and sports leagues.
- Identified and secured fractures of the elbow (*childrens basketball*), scapula (*motocross*), and knee (*volleyball*).

- Managed heatstroke incidents for the set of Austrian production *Sisi* in Riga Old town as sole medic.
- Sole medic for the sold out Kamasi Washington concert at the Riga Palladium, Pink Noise Festival of 2025.

Neuropsychiatry Shadow Rotation

2015

The Richter Clinic

Tulsa, USA

- Recorded detailed patient histories and assisted in the clinical evaluation of neuro-psychiatric patients.
- Participated in diagnostic discussions within multidisciplinary teams.
- Learned patient communication skills from my incredibly experienced mentor. Experienced the difficulties in delivering bad news, and having conversations regarding traumatic events.

EDUCATION

Rīga Stradiņš University

2024

MD | *Doctor of Medicine*

Rīga, Latvia

I completed my medical degree at Riga Stradiņš University, where I built a strong foundation in clinical practice and developed a growing interest in traumatology and orthopaedics, supported by both academic study and clinical experience.

- Gained broad exposure across multiple medical specialties during clinical rotations, including internal medicine, surgery, emergency care, and infectious diseases
- Developed strong interest in microbiology, anatomy, and medical physics (imaging techniques, laser modalities)
- Adapted quickly to the academic demands of clinical work; found this phase particularly formative in shaping professional interests
- Volunteered prior to and during clinical years, with consistent involvement in:
 - **Emergency Department:** Hands-on experience in trauma and polytrauma care; rotations in the emergency trauma unit, reanimation (critical care), and general admissions.
 - **Trauma Department:** Focused on bone infections, bone lengthening procedures, and trauma surgery.
 - **Infectious Disease Hospital:** Strengthened skills in patient communication and infectious disease management.

Thesis with Distinction: Midterm and Longterm Outcomes after Hallux Valgus Surgery

AO Foundation

2023

Trauma Course | *Basic Principles of Fracture Management Essentials*

Online

Completed AO Trauma online course covering core fracture management principles, including assessment, reduction techniques, and implant use. It complemented my traumatology internship and allowed for in depth pre-operative planning discussions with my mentor based on AO concepts.

AO Foundation

2023

Trauma Seminar | *Fractures and Dislocations Around the Knee*

Rīga, Latvia

Discussed clinical practice guidelines regarding fractures of the knee, and approach to the knee as an organ. Guest lecturer Dr. Harm Hoekstra (MD, PhD) introduced his revised 3-column approach to tibial plateau fractures, made possible with the advent of AO-approved VA-LCP plating system, allowing expanded access to posterio-lateral corner injuries.

EIT Health, KTH Royal Institute of Technology, GE Healthcare

2020

HELLOAIRIS | *Artificial Intelligence Online Training*

Online

Completed AI training program by focused on applying AI in medical imaging; highlighting the strengths and limitations underlying the technology. The course provided hands-on experience with AI classifiers, regression analysis, overfitting risks, and real-world radiology applications such as image classification and enhancement.

World Health Organization – Global Health Training Center

2024

ICH GCP | *Good Clinical Practice E6(R2)*

Online

Completed Good Clinical Practice (GCP) course covering ethical principles, regulatory standards, and investigator responsibilities in clinical research focused on participant safety, and data integrity in compliance with international guidelines