

UROP perspective by Prachur Khandelwal

Summer 2024 (undertaken in the Department of Surgery and Cancer)

Prachur was a year 2 undergraduate at Imperial College London in 2023-24: MBBS, School of Medicine

UROP title: Exploring the factors leading to cycling Injury and how it could be prevented

Having almost completed my 2nd year of medicine, I reflected on my original motivations for a medical career: the enticing prospect of engaging in both clinical practice and expanding the medical field by contributing to research (which I had become fascinated by through the International Baccalaureate Diploma Programme curriculum). Yet, recent experiences, including a summer project conducted the previous year and enlightening talks at the Imperial Young Researcher's Conference, showed me that my idea of research was limited. Thus, I recognised the need for diversified research exposure to inform future academic and career choices and tried to leverage Imperial's UROP programme to my advantage.

Initially, I emailed a few professors about areas of research that seemed intriguing to me, expressing my interest in doing a research project under their supervision. Fortunately, I quickly received a reply from Professor Alison McGregor, and with her guidance, I was also able to apply for the Imperial College UROP Award. Receiving this funding was extremely beneficial as it alleviated the pressure of costs that would accompany my prolonged stay in London for the UROP. I would definitely recommend applying for the bursary.

My project revolved around cycling injuries and involved several different components. It started with a thorough literature review to identify what is currently known about cycling injuries in terms of causes and prevention methods and whether there has been any biomechanics-related research in this field in the past. This was a very helpful process as it gave me insight into how to search for papers in a systematic way and also helped me learn more about biomechanics, which was a relatively new field to me.

As the project progressed, it led to several potential avenues for exploration. For instance, I was able to further my data analysis skills by using new packages in the R software to analyse open-source data on cycling collisions and near misses in London. I also learnt how to clean VICON™ data (data obtained by placing light reflective markers on a person and tracking the movements via motion capture cameras.) Furthermore, I was also able to begin exploring how VR simulations have been used and could be used in an outreach program that would help drivers and cyclists understand each other's perspectives.

While, given the time frame, it was not possible to build a VR environment and begin a study, it did lead to the idea of a scoping review on the effectiveness of educational intervention for reducing cycling injury, as previous literature has been very varied on the topic. To begin this review, I learnt what the difference between scoping and systematic reviews is and how to conduct database searches. I plan to continue working on this project after the conclusion of the UROP project.

One thing I was greatly appreciative of and would definitely suggest is having weekly meetings with supervisors. This was extremely helpful in keeping track of my progress. It also gave me the perfect opportunity to seek advice and explore new avenues, as the scope of this project constantly evolved. Through their suggestions, I also learned how to properly organise my research workload using various tools like Gant charts and present it effectively through PowerPoint presentations.

Overall, the UROP has been a great experience in helping me delve further into the research world. It has ensured that I have better acclimatised to a research environment and further strengthened my motivation to get involved in research as a clinician in the future. It has been an excellent opportunity for growth, having taught me various academic and more general skills and is an experience I would recommend to anyone interested in research!