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Visiting Fellowship Report

Name:	Sandro Hodel
E-mail address:	Sandro.hodel1@gmail.com
Country of residence:	Switzerland
Country of visiting fellowship:	Switzerland
Host centre:	Balgrist University Hospital
Name of the host:	Prof. Dr. med. Sandro Fucentese
Dates of visiting fellowship:	01.01.2021-31.12.2021

I agree to share this report of EFORT & EFORT Foundation's website and social media channels: Yes ☒ No ☐

It is recommended that the report is 3-4 pages including the cover page. The following paragraphs should be addressed:

1. Description of clinical activities during the fellowship
2. Description of scientific activities during the fellowship
3. Description of social aspects of the fellowship
4. Technical skills that I learnt during the fellowship
5. Theoretical knowledge that I learnt during the fellowship
6. New knowledge and skills that I can implement in my own practice
7. Overall reflective statement over how the fellowship contributed to my professional development

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8. What are you plans for the future?

Expenses:

Travel: 0 Eur

Accommodation: 18’000 Eur

Other expenses: 2000 Eur

Topic	Please tick one of the boxes ☑ **1 (poor) to 5 (very good)**					**Your comments, thoughts, recommendations**
	1	2	3	4	5	
Education						
Could you improve your knowledge and gain new experiences?	☐	☐	☐	☐	☒	
Host Department						
How was your communication with your host centre (regarding accommodation, programme, etc.)?	☐	☐	☐	☐	☒	
Did they offer you a social programme?	☐	☐	☐	☐	☒	

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Report to EFORT:

Clinical activities during the fellowship

The fellowship took place at the Balgrist Campus, Zurich, which is a national center for musculoskeletal research in Switzerland. The fellowship was a purely basic research fellowship and did not involve clinical patient contact.

Description of scientific activities during the fellowship

The main research activities included three-dimensional analysis of the lower-extremity. The focus was on the influence of bony morphology on knee function and kinematics. During the research period under the guidance of Prof. Fucentese and PD Dr. med. Vlachopoulos, I learned a lot about conceiving a study design, methodological approach and finalizing and writing a manuscript. The research included collaborations with the Research in Orthopedic Computer Science (ROCS) team from Prof. Fürnstahl. We published several articles in well-known peer-reviewed journals. [1-4]

The in-house developed applications and know-how of 3D deformity analysis, surgical planning and the use of new technologies to guide surgery (as augmented reality, machine learning) led to a unique experience. Overall, this was an enrichment for my future clinical and academic career.

Description of social aspects of the fellowship

Due to the COVID pandemic social activities were restricted for several months of my fellowship. Nevertheless, a team event of ROCS could take place and included a fun lasertag day where everybody could demonstrate their competitive side.

Technical skills that I learnt during the fellowship

I learned a lot about the use of several 3D and radiographic software including (CASPA, 3-matic, 3D slicer. Additionally, I gained insights in statistical analysis. During cadaver workshops novel surgical guidance in total knee arthroplasty could be tested.

Theoretical knowledge that I learnt during the fellowship

The analysis of the length change patterns oft different ligamentous structures around the knee involved a lot of literature research and anatomical knowledge. This helped to understand the function and anatomy of the knee in more detail.

New knowledge and skills that I can implement in my own practice

The papers written in reconstructive knee surgery have a great clinical impact in guiding surgery around the knee. This will help in the future to tighten ligaments in correct positions and allow optimal knee function. I will incorporate these findings in my surgical routine in the future.

Overall reflective statement over how the fellowship contributed to my professional development

This fellowship is a unique opportunity to gain insights in basic knee research, 3D analysis and surgical planning of the lower extremities. Besides the work, the personal experience was great. Overall, this was an enrichment for my future clinical and academic career.

What are you plans for the future?

I will move back to the clinical field and start as an attending at Balgrist University Hospital in January 2022.

References

1. Hodel S, Calek AK, Fürnstahl P, Fucentese SF, Vlachopoulos L. Accuracy of joint line restoration based on three-dimensional registration of the contralateral tibial tuberosity and the fibular tip. *J Exp Orthop.* 2021;8(1):84.
2. Hodel S, Mania S, Vlachopoulos L, Fürnstahl P, Fucentese SF. Influence of femoral tunnel exit on the 3D graft bending angle in anterior cruciate ligament reconstruction. *J Exp Orthop.* 2021;8(1):44.
3. Hodel S, Zindel C, Jud L, et al. Influence of medial open wedge high tibial osteotomy on tibial tuberosity-trochlear groove distance. *Knee Surg Sports Traumatol Arthrosc.* 2021.
4. Zaleski M, Hodel S, Fürnstahl P, Vlachopoulos L, Fucentese SF. Osteochondral Allograft Reconstruction of the Tibia Plateau for Posttraumatic Defects-A Novel Computer-Assisted Method Using 3D Preoperative Planning and Patient-Specific Instrumentation. *Surg J (N Y).* 2021;7(4):e289-e296.