

## **CURRICULUM VITAE**



### **Niklaus F. Friederich, MD, Prof. Dr. med. (Univ. Basel)**

Adjunct Professor of Orthopaedic Surgery | University of Basel  
Medical Advisor, MIRACLE project  
Head, Center of Biomechanics & Biocalorimetry  
Senior consultant, Dept. Orthopaedics & Trauma, University Hospital Basel

#### **Personal Data**

Birthdate: July 28, 1955 (Zürich)  
Marital Status: Married, Wife – Zusanne  
Son: Hannes F. Friederich, PhD  
Daughter: Rahel A. Friederich, M.A.  
Son: David N. Friederich, M.S.

#### **Education**

Prof. Dr. med.	University of Basel, Switzerland Adjunct Professor of Orthop. Surgery	2003
P.D. (Private Docent)	University of Basel, Switzerland Medical Faculty <i>Functional Biomechanics</i>	1997
M.D.	University of Berne, Switzerland Medical Faculty	1985
Swiss Federal Licence.	Dept. Interior, Swiss Federal Govt. University of Bern, Medical School	1981

#### **Appointments**

2015 – present	Medical Advisor, MIRACLE project, Dept. Biomedical Engineering University of Basel, Switzerland
2012 – present	Head, Center of Biomechanics and Biocalorimetry, Dept. Biomedical Engineering University of Basel, Switzerland
2015 - 2020	Director of Training, Professor, Dept. of Orthopaedic Surgery University Hospital Basel, Switzerland
2013 - 2015	Founder and Co-Director, Orthoklinik Dornach, Switzerland
1998 - 2013	Director and Head of the Dept. of Orthopaedic Surgery, Kantonsspital Bruderholz, BL, Switzerland
1983 - 1997	Resident, senior resident, junior staff, Dept. of Orthopaedic Surgery University Hospital Basel and Bruderholz (Academic teaching hospital)

#### **Invited (Salaried) Visiting Professorships**

2019	Dept Orthopaedics/Sports Medicine, Sunnybrook Health Sciences Centre University of Toronto, ON, Canada
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#### **Honorary Memberships**

1993	American Orthopaedic Society for Sports Medicine AOSSM
1998	Hungarian Orthopaedic Society
2015	Croatian Orthopaedic Society

## Awards

- 1990 **Top Video Program Award**, 57<sup>th</sup> Annual Meeting, American Academy of Orthopaedic Surgeons AAOS  
1992 **Venel Award, best research paper** - Swiss Orthopaedics (Swiss Society for Orthopaedic Surgery)  
„Anterior Cruciate Ligament Graft Loads During Knee Rehabilitation: An in-vitro study“  
1993 **ESSKA-AOSSM Sports Medicine Traveling fellowship**

## Major Offices Held in Professional Societies

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|----|--|-------------------------------|
| 1. | Magellan Orthopaedic Society (1994 – present)                          | Historian 1994 – 2016         |
| 2. | Orthopädische Arbeitsgemeinschaft Knie (OAK, Swiss; 1990 – 2010)       | President 1997 – 1999         |
| 3. | Deutschsprachige Arbeitsgemeinschaft Arthroskopie AGA (1992 – present) | Treasurer 1997 – 2008         |
| 4. | Deutsche Arthroshilfe e.V., Mannheim, Germany                          | Board of Trustees 1997-2012   |
| 5. | Pro Motio – Foundation for Orthopaedic Biomechanical Research –        | Founder, President 1998 -2013 |
| 6. | Swiss Orthopaedic Club for Exchange and Research SOCA (2000 – present) | President 2010 – present      |
| 7. | Anterior Cruciate Ligament Study Group (1990 – present)                | President 2008 – 2010)        |
| 8. | Asia-Pacific Knee, Sports Medicine and Arthroscopy Society APKASS      | Founding member 2014          |
| 9. | EXPAMED, Expert Panel on Medical Devices, EU-Commission, Brussels      | Since 2020                    |

## Editorial Boards (past and present)

1. Swiss Surgery (1998 – 2003)
2. Knee Surgery, Sports Traumatology and Arthroscopy KSSTA (1999 – present)
3. Operative Orthopädie und Traumatologie (1999 – 2001)
4. Orthopaedics and Orthopaedics International Edition (1993 – 2001)
5. Arthroscopie (2002 – 2004)
6. Orthopaedic Journal of Sports Medicine (2011 – present)
7. J Children’s Orthopaedics (2018 – present)

## Publications/Lectures and Students, Fellows and Junior Faculty supervised

Dr. Friederich has published **307** refereed journal articles, **10** book chapters and **> 500** abstracts and extended abstracts. Dr. Friederich has also edited **2** books. He has given over **450** lectures, both nationally and internationally. Dr. Friederich has supervised master thesis and MD thesis of over **60** students and orthopaedic surgeons from 8 countries. He has organized and chaired **5 major international knee conferences** in Basel (Basel Knee Congresses).

Till Nov 2022 his research has been cited 5313 times (1744 since 2018).  
His h-index is 38 (since 2018: 23), his i10-index is 95 (since 2018: 45).

## Research Interests

- Functional biomechanics of the cruciate ligaments and their substitutes
- An integrated approach to novel bone surgery: 3D-Planning, Deep-learning, osteotomy utilizing laser, smart implants
- Robot assisted bone surgery
- Software and simulator assisted teaching and learning for orthopaedic residents.
- Development of biodegradable metallic materials (Magnesium) to be used in bone surgery and tissue engineering approaches to cartilage defects.

## Representative Journal Publications

1. Stolz M, Gottardi R, Raiteri R, Miot S, Martin I, Imer R, Stauffer U, Raducanu A, Düggelin M, Baschong W, Daniels AU, **Friederich NF**, Attila A, Aebi U: Early detection of aging cartilage and osteoarthritis in mice and patient samples using atomic force microscopy. *Nature Nanotechnology*, 4(3):186-192, 2009  
Citations: 442
2. Sommer C, **Friederich NF**, Müller W: Improperly placed anterior cruciate ligament grafts: correlation between radiological parameters and clinical results. *Knee Surgery, Sports Traumatology, Arthroscopy*, 8(4):207-213, 2000  
Citations: 281
3. Biedert RM, Stauffer E, **Friederich NF**: Occurrence of free nerve endings in the soft tissue of the knee joint. A histologic investigation. *Am J Sport Med*, 20(4):430-433, 1992  
Citations: 240
4. Räder DA, **Friederich NF**, Hefti F: Discoid Lateral Meniscus in Children. Long-term Follow-up after Total Meniscectomy. *The Journal of Bone and Joint Surgery*, 80(11):1579-1586, November 1998  
Citations: 235
5. Hirschmann MT, Konala P, Amsler F, Iranpour F, **Friederich NF**, Cobb JP: The position and orientation of total knee replacement components: a comparison of conventional radiographs, transverse 2D-CT slices and 3D-CT reconstruction. *J Bone Joint Surgery* 93B(5), 629-633, 2011  
Citations: 204
6. Hirschmann MT, Testa E, Amsler F, **Friederich NF**: The unhappy total knee arthroplasty (TKA) patient: Higher WOMAC and lower KSS in depressed patients prior and after TKA. *Knee Surgery, Sports Traumatology, Arthroscopy* 21 (10) 2405-2411, 2013  
Citations: 181
7. Amis AA, Beynon B, Blankevoort L, Chambat P, Christel P, Dürselen L, **Friederich NF**, Grood E, Hertel P, Jakob R, Müller W, O'Brien M, O'Connor J: Proceedings of the ESSKA Scientific Workshop on reconstruction of the anterior and posterior cruciate ligaments. *Knee Surg. Sports Traumatol. Arthroscopy* 2(3):124-132, 1994  
Citations: 139
8. Hirschmann MT, Zimmermann N, Rychen T, Candrian C, Hudetz D, Lorez LG, Amsler F, Müller W, **Friederich NF**: Clinical and radiological outcomes after management of traumatic knee dislocation by open single stage complete reconstruction. *BMC Musculoskeletal Disorders* 2010. 11:102. DOI 10.1186/1471-2474-11-102  
Citations: 73
9. **Friederich NF**, O'Brien WR: Functional anatomy of the cruciate ligaments. In: Jakob RP, Stäubli HU (editors): *The Knee and the cruciate ligaments. Anatomy, biomechanics, reconstruction, complications, rehabilitation*: Springer-Verlag Berlin-Heidelberg-New York-Tokyo 1992, S. 78-91  
Book chapter
10. O'Brien WR, **Friederich NF**: Fibre recruitment of the cruciate ligaments. In: Feagin JA Jr (ed): *The Crucial Ligaments*, 2nd edition, Churchill-Livingstone New York, 1993, S. 307-317  
Book chapter
11. O'Brien WR, **Friederich NF**: Isometric placement of cruciate ligament substitutes. In: Feagin JA Jr (ed): *The Crucial Ligaments*, 2nd edition, Churchill-Livingstone New York, 1993, S. 595-604  
Book chapter