



2019 GUEST NATION THE NETHERLANDS

 **ORS 2019** ANNUAL MEETING February 2-5, 2019
Austin Convention Center
Austin, TX



NEDERLANDSE
ORTHOPAEDISCHE
VERENIGING | NOV



COLOFON

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Netherlands Orthopaedic Association
(NOV)

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Contents

Colofon and Preface	03
Introduction to the Netherlands	06
Netherlands Orthopaedic Association (NOV)	13
Message from the president	13
Facts and organization chart	14
Mission	16
Dutch Arthroplasty Registry (LROI)	19
CORE and Science agenda initiative	22
Orthopaedic research in the Netherlands	24
University Medical Centers	25
Public-private partnerships collaboration	27
Best practices	28
Orthopaedic giants of the Netherlands	29
Klaas de Groot	29
Rik Huiskes	30
Tom Slooff	31
Guest Nation: the Netherlands @ORS2019 Annual Meeting	32
Useful links	42

Preface

Dear reader,

This booklet aims to introduce the Netherlands Orthopaedic Association (NOV) to the general public at the 2019 ORS Annual Meeting in Austin TX, USA.

This booklet summarizes an introduction to the Netherlands, structure and activities of the Netherlands Orthopaedic Association and the Dutch Arthroplasty Registry (LROI) and insight in the Dutch orthopaedic research environment.

The primary reason for the compilation of this book is the fact that sharing information is the first step to mutual understanding, a change to learn and building further collaboration.

This book is by no means intended as an comprehensive overview but aims to raise awareness and stimulate discussion in a fun and concise way.

We trust you will find this a useful addition to your clinical practice and education.

Sincerely yours,

Netherlands Orthopaedic Association Ambassadors
© ORS 2019 Annual Meeting



Ambassadors @ORS2019



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Introduction to the Netherlands

Facts & figures

Population:

17.08 M

Surface area:

41,528 km² (18.41% water)

Density:

488/km² (highest in the European Union)

Capital city:

Amsterdam

Government:

The Hague

Official language:

Dutch

Government:

Constitutional monarchy - parliamentary democracy

Religion:

44% no religion, 19% Protestant, 29% Roman Catholic, 6% Muslim

Currency:

Euro

Highest point:

323 m (Vaalserberg, Limburg)

Lowest point:

-12.8 m below sea level



Introduction to the Netherlands

Facts & figures

- One country:** the Netherlands
- Citizens:** Dutch
- 12 provinces:** Drenthe
Flevoland
Friesland (Fryslân)
Gelderland
Groningen
Limburg
North Brabant
North Holland
Overijssel
South Holland
Utrecht
Zeeland

Additionally some Island in the Caribbean



To learn more in a fun way, please visit:

https://www.youtube.com/watch?v=eE_IUPInEuc



the difference between
Holland & the Netherlands

Introduction to the Netherlands

Clogs, dikes, tulips & windmills ... and a whole lot more!

The Netherlands is a constituent country located in Western Europe and with territories in the Caribbean. It shares a border with Belgium & Germany. >25% is located below sea-level. The Netherlands is a constitutional monarchy and the chief of state is the king. The House of Oranje-Nassau has governed the Netherlands since 1815. King Willem-Alexander was crowned in 2013.

The Netherlands is famous for liberal social policies, maritime trading traditions, battles to hold back the sea, robust multiculturalism and leading in technological communications. Resulting Dutch lifestyle is a mosaic of cultural blend.

The Netherlands has a mixed economic system which includes a variety of private freedom, combined with centralized economic planning and government regulation. Netherlands is a founding member of the European Union (EU)

The Netherlands consistently ranks among the top places in the world to live and work. The country may be small in size, but is the world's second largest exporter of agricultural products. Living standards consistently rank high in the OECD's Better Life Index, and the Netherlands has the fourth best work-life balance and high levels of employment and household wealth. Dutch children, likewise, are ranked as the happiest in the developed world, topping two surveys conducted by UNICEF.

The Dutch are creative, open minded, informal and pragmatic. They are also rather direct, honest and open in their dealings with others. Dutch people 'like to be as normal as possible' according to the Dutch saying 'just act normal, that's crazy enough'. The Dutch are known for their tolerant attitudes towards topics such as abortion, euthanasia and (soft) drug use.

The most popular sports in the Netherlands are football, hockey, tennis, cycling, golf, volleyball, korfbal, handball, swimming and ice-skating. Dutch football and speed skating especially enjoy a worldwide reputation.





Introduction to the Netherlands

Fun facts

- More than a quarter of the Netherlands is below sea level
- Dutch people are the tallest in the world
- The Netherlands is the most densely populated nation in Europe
- Flat as a pancake, highest point 323 m above sea level
- Amsterdam is built entirely on poles
- Tulips originated in Turkey
- The Dutch love their coffee
- 86% of Dutch speak English as a second language
- the Netherlands is the largest exporter of beer in the world



To learn more in a fun way, please visit:
<https://awesomeamsterdam.com/10-fun-facts-about-the-netherlands/>



Introduction to the Netherlands

Top inventions of the Netherlands ...

- The submarine
- The telescope
- The microscope
- The eye-test (Snellen chart)
- The fire hose
- The speed-camera
- The cassette tape
- CD, DVD, the laser disc and Blu-Ray
- Bluetooth and WIFI
- Artificial kidney (Kolff)



To learn more in a fun way, please visit:
[https://www.iamexpat.nl/lifestyle/
lifestyle-news/10-important-dutch-
inventions](https://www.iamexpat.nl/lifestyle/lifestyle-news/10-important-dutch-inventions)



Introduction to the Netherlands

Culinary inventions of the Netherlands... Treat or threat??



To learn more in a fun way, please visit:
https://en.wikipedia.org/wiki/Dutch_cuisine



Netherlands Orthopaedic Association (NOV)



Message from the President

Dear colleagues,

On behalf of the Netherlands Orthopaedic Association (NOV) and the Dutch Arthroplasty Registry (LROI), I would like to congratulate the Orthopaedic Research Society (ORS) with this ORS 2019 Annual Meeting.

We are honored and thrilled to be present at this outstanding event as a guest nation and welcome all participants to our NOV session and meet you in our NOV booth.

We would very much like tell you about our activities in order to learn from all your expertise and experience.

We thank the Orthopaedic Research Society (ORS) full heartedly for this fine opportunity.

We are very delighted to be here and look forward in meeting you all !

Sincerely yours,
Hans Andre Schuppers, president NOV



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VERENIGING | NOV

Netherlands Orthopaedic Association (NOV)

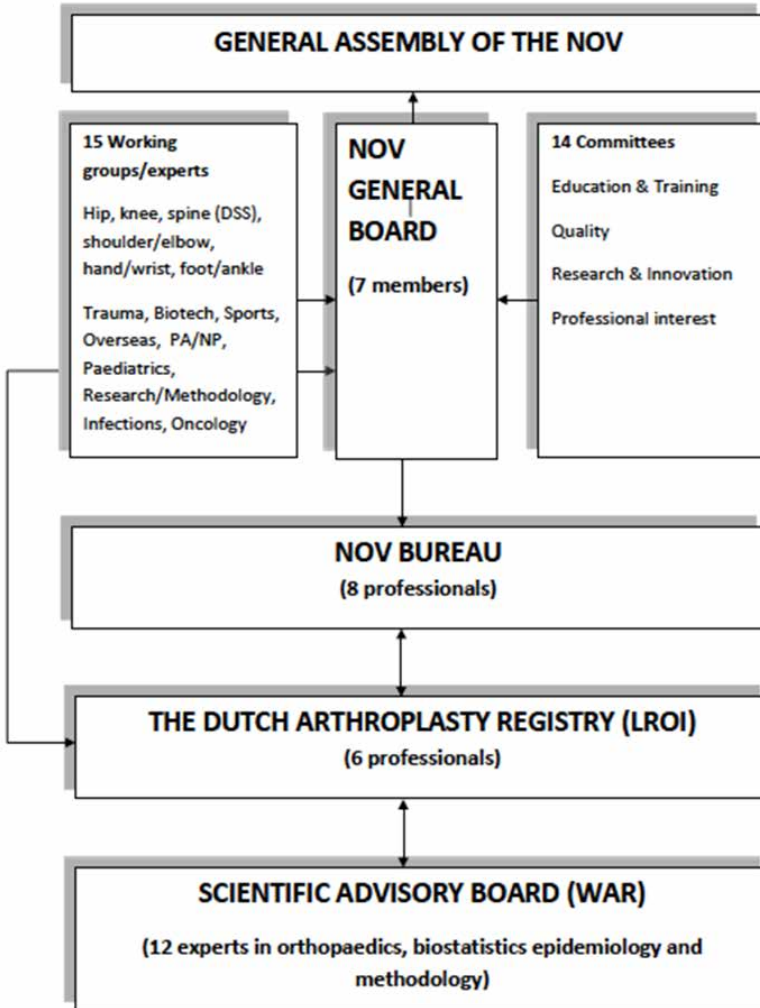
Facts

- Founded in 1898
- 1.450 members (750 orthopaedic surgeons, 250 residents ; 97% coverage)
- Board (7 members), Bureau (15 professionals)
- 15 Working groups (experts)
 - * Hip, knee, spine (DSS), shoulder/elbow, hand/wrist, foot/ankle
 - * Trauma, Biotechnology, Sports, Overseas, PA/ NP, Paediatrics
 - * Research/Methodology, Infections, Oncology
- 14 Committees among them 4 key committees
 - * Education & Training
 - * Quality
 - * Research & Innovation
 - * Professional interest



Netherlands Orthopaedic Association (NOV)

Organizational Chart



Netherlands Orthopaedic Association (NOV)

Mission: “Orthopaedics keeps the Dutch moving (i.e. active & alive !)”

Three major goals:

1. Deliver high level quality patient care

- Knowledge development (research; CORE)
- Knowledge dissemination (training, education, guidelines)
- Decide together with the patient
- Accessibility of information

2. Be accountable

- Develop a quality/monitoring system: register, classify
- Monitor orthopaedic care: analyse outliers, audit hospitals

3. Take care of the professional interest of the orthopaedics

- Professional interest/syndicat
- Manpower planning
- Professional development
- Develop networks
- Public relations



Netherlands Orthopaedic Association (NOV)

Goal 1: Deliver high level patient care
Structure workgroups

How do we achieve this?

- Knowledge development (research)
- Knowledge dissemination (training, education, guidelines)
- Decide together with the patient
- Accessibility of information




Netherlands Orthopaedic Association (NOV)

Goal 2: Be accountable

How do we achieve this?

- Develop a quality/monitoring system: register, classify
- Monitor orthopaedic care: analyse outliers, audit hospitals
- Dutch Arthroplasty Registry (LROI) www.lroi.nl



The screenshot shows the homepage of the LROI website. The browser address bar displays 'www.lroi.nl'. The navigation menu includes 'ACTUEEL', 'OVER DE LROI', 'INVOERDERS', 'PATIËNTEN', 'PUBLICATIES', 'WETENSCHAP', and 'DOWNLOADS'. A search bar is present with the placeholder text 'Waar kunnen we u mee helpen?'. The main content area features the text 'LROI brengt Orthopedie in beeld' and a blue button labeled 'Inloggen?'. The background image shows various orthopedic surgical instruments.

De LROI is een register voor gewrichtsprothesen (heup, knie, enkel, schouder, elleboog, pols, vinger en duim) die in Nederland geplaatst zijn.



Netherlands Orthopaedic Association (NOV)

Dutch Arthroplasty Registry (LROI)



www.LROI.nl

- Digital quality register of orthopaedic implants established in 2007.
- 100% National coverage
- Completeness: 99% hip, 99% knee, 94% shoulder, 92% ankle and 88% elbow
- Contributes to the improvement of orthopaedic care in the Netherlands.
- Orthopaedic departments are able to compare the results of the hip and knee prostheses inserted in their hospital to the national data through the LROI dashboard.
- LROI is important for the traceability of joint implants, for patient safety. In case of a problem concerning a prosthesis.



Netherlands Orthopaedic Association (NOV)

Dutch Arthroplasty Registry (LROI)



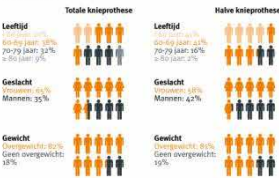
Year reports can be found at
<https://www.lroi.nl/publicaties/jaarrapportage>



Downloads can be found at
<https://www.lroi.nl/downloads>

Wie krijgt een knieprothese en waarom?

- 1 Het knieprothese is de meest voorkomende knieoperatie. Het wordt meestal gedaan bij mensen die ouder zijn dan 60 jaar. Het wordt meestal gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben. Het wordt meestal gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben.
- 2 Er wordt meestal gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben. Het wordt meestal gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben.
- 3 De meeste knieprothesen worden gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben. Het wordt meestal gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben.



Totale of halve knieprothese

De meeste knieprothesen worden gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben. Het wordt meestal gedaan bij mensen die overgewicht hebben en/of een knieprothese hebben.

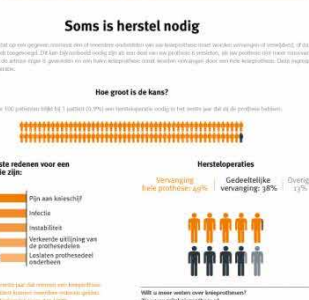
Totaal aantal knieprothesen

26.754 knieprothesen geplaatst in 2014

Dit zijn totale knieprothesen en de halve knieprothesen samen

26.754 knieprothesen geplaatst in 2014

Dit zijn totale knieprothesen en de halve knieprothesen samen



Netherlands Orthopaedic Association (NOV)

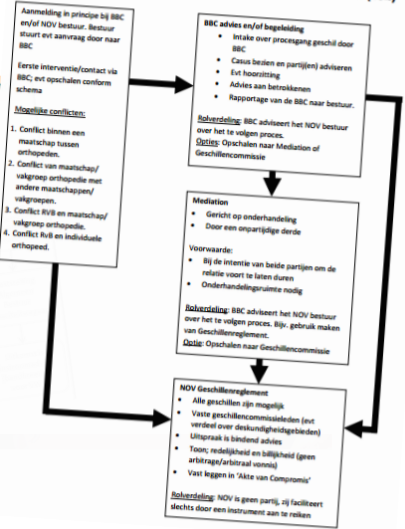
Goal 3: Professional profiling & development

How do we achieve this?

- Professional interest/syndicat
- Manpower planning
- Professional development
- Develop networks
- Public relations



Routering en actie in kader bij geschillen en conflicten (vs2)



- BBC-advies
- Juridische dienstverlening
- Transparantieregister
- DBC
- Diagnosethesaurus
- Jonge Klaren
- Matchmaker orthopedie**

Beroepsbelangen = Matchmaker

Matchmak

Om de dreigende problematiek rondom de werkgelegenheid het nouer te bieden hebben het NOV-bestuur en de VOCA inmiddels verschillende initiatieven genomen. De NOV biedt ook ondersteuning bij het zoeken naar een baan en startte samen met de VOCA de *Matchmaker Orthopedie*. Deze is alleen beschikbaar voor NOV-leden.

Het doel van de Matchmaker is om vraag en aanbod bij elkaar te brengen en een scherpe match te maken tussen de mensen uit het veld en de (toekomstig) beschikbare banen in de orthopedie. Alle werkzoekende AIOS orthopedie en Jonge Klaren orthopedie - die lid zijn van de NOV - nodigen we uit om zich aan te melden. [Dit kan via deze link](#). Om de lijst actueel te houden moet u uw beschikbaarheid elke 3 maanden verlengen. Dit kunt u doen in [MijnNOV](#); knop *Persoonlijke gegevens* en vervolgens het tabblad *Mijn Matchmakers*

Netherlands Orthopaedic Association (NOV)

CORE and science agenda initiative

- CORE = Consortium Orthopedic REsearch: a national network for initiating and prosecuting scientific research in the field of orthopedics; from facilitating to supporting, evaluating, communicating and implementing. A setup like this is rather unique in the world!
- The aim is to further increase the quality of orthopedic treatment, with improvement of efficiency and efficiency also being important focal points.
- The NOV organizes CORE meetings. We agree on the subjects that we work on and who are going to be involved in this. Topics of the scientific agenda are decided by all NOV members.
- In the future there will be quarterly meetings where we will discuss the starting and ongoing studies, as well as rejected proposals. Knowledge and experiences about the care evaluation research are exchanged here.

A list of current projects:

<https://www.orthopeden.org/wetenschap/onderzoeksprojecten>

Scientific agenda:

<https://www.orthopeden.org/kwaliteit/agenda-zorgevaluatie>



Netherlands Orthopaedic Association (NOV)

CORE and science agenda initiative projects

- LEAK study; research into the best treatment of wound leakage in a hip or knee prosthesis. Dutch version
- DART study; research into the cost-effectiveness of surgical treatment versus plaster in distal radius fractures in the elderly.
- PATIO; stands for Physiotherapeutic Treat-to-target Intervention after Orthopedic surgery; a cost-effectiveness study (after placing hip or knee prosthesis).
- APOLLO; this trial evaluates the surgical approach of a head and neck prosthesis in a hip fracture.
- FRAIL HIP; to set up a multicenter study on the non-operative treatment of the vulnerable, institutionalized elderly patient with a hip fracture.

Orthopaedic research in the Netherlands

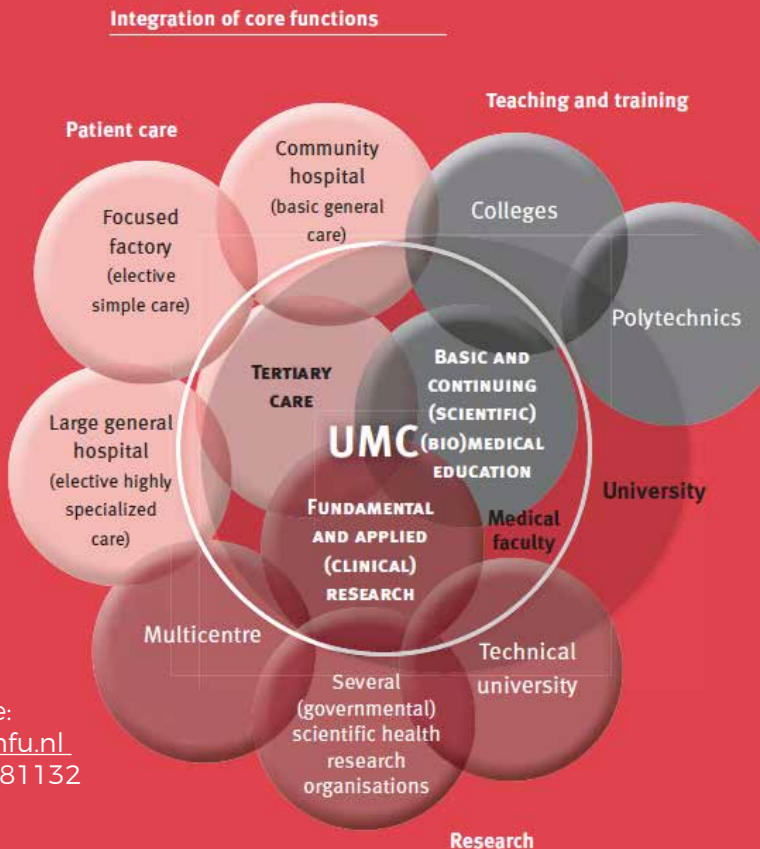
- ★ University Medical Centers
- Ω Technical Universities
- Orthopaedic departments



Orthopaedic research in the Netherlands

University Medical Centres

- Positioned on the intersection of medical education, (bio) medical research and patient care with a distinct public mission
- Three core responsibilities
 - * Teaching and training
 - * Basic and clinical research
 - * (Tertiary) patient care



Source:
www.nfu.nl
NFU-081132

Public-Private Partnerships

Combine technology push with market pull

- PPPs are especially suited to the life sciences, with their long development horizon, multidisciplinary nature and collaborative, “open innovation” paradigm.

Generate knowledge...

...translate into applications...

...deliver to users



Technology push



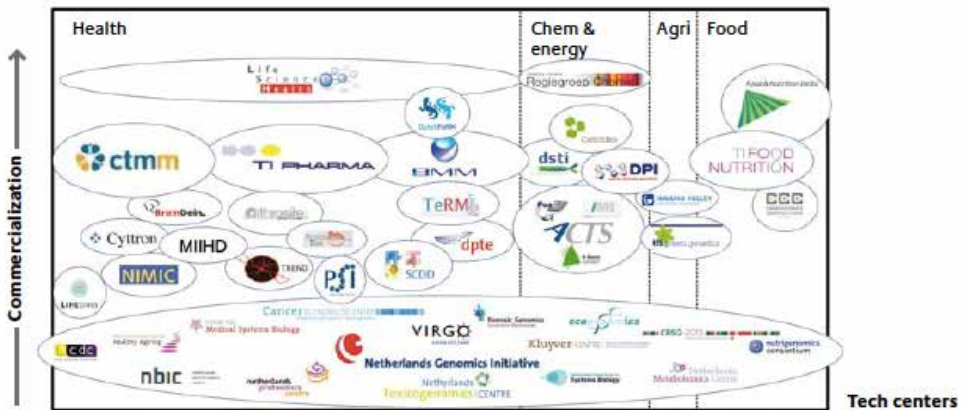
Market pull



Public-Private Partnerships

Combine technology push with market pull

- The Dutch PPPs landscape of the life sciences- the width per sector indicates the relative PPP investments. Between 2003 to 2007, about EUR 5 billion was committed to PPPs in the Netherlands. Some 40% of it, EUR 2 billion, falls within four sectors impacted by the life sciences: food, health, agriculture and chemicals & energy



Orthopaedic research in the Netherlands

Best practices

Please view the prepared slide show on the Dutch Orthopaedic Association (NOV) booth during ORS 2019 Austin, TX, USA



Orthopaedic giants of the Netherlands



Klaas de Groot

Klaas de Groot (born 3 November 1940, Bergen, Limburg) is Emeritus Professor at the Tissue Engineering Group at the University of Twente.

In his academic career he focused on the research and development of bioceramics that resemble the composition of bone. He has developed two types of bioceramic, namely bulk ceramics (dense, porous, large and small) for mechanically unloaded bone fillers, and coatings for improving the bone bonding of strong, but less biocompatible, metallic orthopedic and dental implants. His group also studied the incorporation of drugs and growth factors such as Bone Morphogenetic Proteins (BMP) into such ceramics and coatings.

Landmark publication:

Geesink RG, de Groot K, Klein CP. Chemical implant fixation using hydroxyl-apatite coatings. The development of a human total hip prosthesis for chemical fixation to bone using hydroxyl-apatite coatings on titanium substrates. *Clin Orthop Relat Res.* 1987 Dec;(225):147-70.

Orthopaedic giants of the Netherlands



Rik Huiskes

Rik huiskes (born 18 December 1944, Eindhoven, Noord-Brabant) was Emeritus Professor Biomedical engineering at Eindhoven University of Technology TU/e.

In his academic career he focused on research and development (biomedical engineering, Eindhoven University of Technology) was appointed as Academy Professor in 2005 due to the successful development of calculation models for artificial joints, and for his new calculations of the influence of load on bone growth.

Landmark publication:

Huiskes R. If bone is the answer, then what is the question? J Anat. 2000 Aug;197 (Pt 2):145-56. Review.

Huiskes R, Weinans H, van Rietbergen B. The relationship between stress shielding and bone resorption around total hip stems and the effects of flexible materials. Clin Orthop Relat Res. 1992 Jan;(274):124-34.



Orthopaedic giants of the Netherlands



Tom Slooff

Tom Slooff (born 3 November 1932, Eindhoven) is Emeritus Professor at the department of orthopaedic surgery at Radboud University Medical center Nijmegen, the Netherlands.

In his academic career he focused on the research and development of the bone impaction grafting technique which he started to pioneer in the late 1970's focusing first on the acetabular reconstruction.

In 1980 he was appointed clinical professor of orthopaedic surgery. He devoted a lot of time and effort on developing and promoting the Laboratory for Experimental Orthopedics.

Landmark publication:

Slooff TJ, Huiskes R, van Horn J, Lemmens AJ. Bone grafting in total hip replacement for acetabular protrusion. *Acta Orthop Scand.* 1984 Dec;55(6):593-6.

Guest Nation: the Netherlands @ ORS2019

ors.org/2019-guest-nation/

- **the Netherlands Booth**
- **the Netherlands Research Presentations**
- **the Netherlands ORS 2019 Opening Session**
- **the Netherlands Podium Sessions**
- **the Netherlands ePosters**
- **the Netherlands Technique Workshop**
- **the Netherlands Research Interest Group:
Growth Factors**



Guest Nation: the Netherlands @ ORS2019

the Netherlands Booth

Stop by the guest nation booth in the exhibit and poster hall to say hello to representatives from the Netherlands Orthopaedic Association (NOV) Saturday, February 2 - Monday, February 4.



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Guest Nation: the Netherlands @ ORS2019

the Netherlands Research Presentations

**Join representatives from the NOV and invited
Guest Nation attendees highlighting research
from the Netherlands.**

- Saturday, February 2
5:45 PM – 6:15 PM
Innovation Theater
- Monday, February 4
5:45 PM – 6:15 PM
Innovation Theater



Guest Nation: the Netherlands @ ORS2019

the Netherlands ORS 2019
Opening Session

**Saturday, February 2
8:00 AM - 9:00 AM**

**The ORS Guest Nation will be recognized during
the Opening Session.**

Short presentation given by:

Sjoerd Bulstra, PhD

Vice President, Netherlands Orthopaedic
Association (NOV)

Head of Department of Orthopedic Surgery,
University Medical Center Groningen (UMCG)

Guest Nation: the Netherlands @ ORS2019

the Netherlands Podium Sessions

The following papers are presented in Podium Sessions from the Guest Nation - The Netherlands. Please check the Annual Meeting mobile app for room locations.

Saturday, February 2 - Clinical Studies in Orthopaedics I 10:40 AM - 10:50 AM

Paper No. 0026

Knee Joint Distraction Compared With High Tibial Osteotomy And Total Knee Arthroplasty: Two-year Clinical, Structural, And Biomarker Outcomes. Mylène P. Jansen; Nick J. Besselink; Ronald J. van Heerwaarden; Roel J. Custers; Jan-Ton A. van der Wouden; Karen Wiegant; Sander Spruijt; Pieter Emans; Peter M. van Roermund; Simon C. Mastbergen; Floris P. Lafeber

Sunday, February 3 - Images and Diagnostics for Infection 4:40 PM - 4:50 PM

Paper No. 0203

Real-time Arthroscopic Imaging Of Bacterial Biofilms In A Human Post-mortem Model Using Fluorescently Labelled Vancomycin. Jorrit Schoenmakers; Marjolein Heuker; Marina Lopez Alvares; Gooitzen van Dam; Jan Maarten van Dijk; Paul Jutte; Marleen van Oosten



Guest Nation: the Netherlands @ ORS2019

the Netherlands Podium Sessions

The following papers are presented in Podium Sessions from the Guest Nation – The Netherlands. Please check the Annual Meeting mobile app for room locations.

Monday, February 4 Knee – Structure and Function 10:40 AM – 10:50 AM

Paper No. 0212

In-vivo Length Changes And Isometry Of The Medial Patellofemoral Ligament During Weightbearing Motion. Willem A. Kernkamp; Cong Wang; Changzhao Li; Hu Hai; Ewoud R. van Arkel; Rob G. Nelissen; Robert LaPrade; Samuel K. van de Velde; Tsung-Yuan Tsai

Monday, February 4 – Hip – Arthroplasty 3:25 PM – 3:35 PM

Paper No. 0281

RSA Migration Analysis Of The Uncemented Trident Tritanium And The Trident HA Coated Acetabular Component: A Two Year Randomized Controlled Trial. Jacobus Arts; Timothy Vranken; Bart Kaptein; Lennard Koster; Elisabeth Jutten; Rene ten Broeke

Guest Nation: the Netherlands @ ORS2019

the Netherlands ePosters

The following papers are being presented as moderated ePosters from the Guest Nation - Netherlands in ePoster Theater located in the exhibit and poster hall.

**Sunday, February 3
Exhibit Hall - ePoster Theater 1
9:30 AM - 9:33 AM**

Poster No. 653

Involvement Of M2 Macrophages And Osteoclastogenesis In Osteoinduction By Calcium Phosphate With Submicron Topography. Huipin Yuan; Davide Barbieri; Florence de Groot; Lukas A. van Dijk; Joost de Bruijn

**Sunday, February 3
Exhibit Hall - ePoster Theater 1
3:18 PM - 3:21 PM**

Poster No. 0454

Cartilage and Synovium - Treatment and Therapeutics

Initial Structural Response Predicts Long-term Survival Of Knee Joint Distraction As A Treatment For Knee Osteoarthritis. Mylène P. Jansen; Goran S. van der Weiden; Roel J. Custers; Simon C. Mastbergen; Floris P. Lafeber



Guest Nation: the Netherlands @ ORS2019

the Netherlands Technique Workshop

Sunday, February 3
9:15 AM - 9:45 AM

HRpQCT to Study Longitudinal Bone Remodeling and Biomaterials Performance in Clinical Patients. Sponsored by: Scanco Medical AG

Speaker: Jacobus J.C. Arts, PhD

S

- Associate Professor Translational Biomaterials
Department Orthopaedic Surgery
Maastricht University Medical Centre, the Netherlands
- Associate Professor Translational Biomaterials
Department Orthopaedic Biomechanics
Eindhoven University of Technology TU/e, the Netherlands

High Resolution Peripheral Quantitative Computed Tomography (HRpQCT) is now more widely available and used in a variety of studies to study longitudinal changes in bone micro-architecture. The presentation will highlight the latest developments in the technology (hardware and software) as well as update on current applications and novel uses of HRpQCT. The use of Finite Element Analysis (FEA) tools to generate indices of mechanical strength data and fracture prediction will also be discussed.

Guest Nation: the Netherlands @ ORS2019

the Netherlands Research Interest Group: Growth Factors

Growth Factors: Integration of Growth Factor Input by Cells

**Sunday, February 3
6:15 PM – 7:45 PM**

**Organizer: Peter van der Kraan, PhD, Radboud
University Medical Center**

The goal of the RIG is to enhance awareness and to stimulate collaboration of orthopaedic researchers working on the role and applicability of growth factors in orthopaedic diseases.

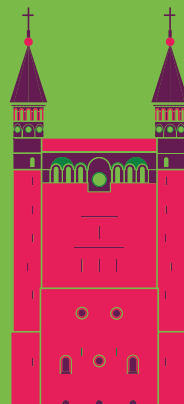
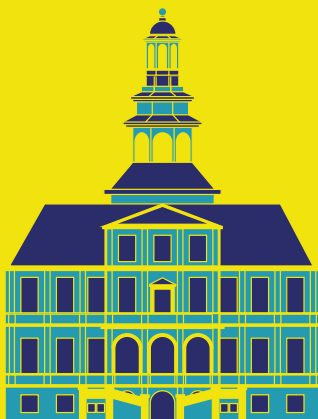
The RIG goal is to encourage intimate discussions with speakers and attendees on GFs in orthopedic research. One speaker will provide an overview, and 3-5 speakers will present exciting new data for discussion. Theme will be on the integration of growth factor input by cells.





SAVE THE DATE
2-5 OCTOBER 2019

BUILDING BRIDGES



M A A S T R I C H T
EORS 2019

W W W . E O R S 2 0 1 9 . O R G

 Maastricht UMC+



27th annual meeting of the
European Orthopaedic Research Society
© MECC | Maastricht, the Netherlands



NEDERLANDSE ORTHOPAEDISCHE VERENIGING | NOV

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Orthopaedic Association (NOV)**

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Phone +31(0) 73 700 34 10
Email nov@orthopeden.org

Useful links

- www.orthopeden.org
- www.lroi.nl





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