Final Programme

EUROSPINE 2015
2–4 September 2015
Bella Center Copenhagen, Denmark
www.eurospine2015.eu
<table>
<thead>
<tr>
<th>Event Description</th>
<th>Dates</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Spine Course in collaboration with EANS</td>
<td>Part 1: 6-8 September 2015</td>
<td>Innsbruck, Austria</td>
</tr>
<tr>
<td></td>
<td>Part 2: 2016, Dates and venue tba</td>
<td></td>
</tr>
<tr>
<td>2 Advanced Modules 2016</td>
<td>Dates to be announced</td>
<td>Strasbourg, France</td>
</tr>
<tr>
<td>3rd Spring Speciality Meeting 2016</td>
<td>12-13 May 2016</td>
<td>Kraków, Poland</td>
</tr>
<tr>
<td>TFR Basic Biomechanics &amp; Biomechanical Methods for Experimental Research of the Musculoskeletal System 2016</td>
<td>19-22 July 2016</td>
<td>Ulm, Germany</td>
</tr>
<tr>
<td>TFR How to Read &amp; Interpret a Scientific Paper 2015 (in French)</td>
<td>10 December 2015</td>
<td>Ivry-sur-Seine, France</td>
</tr>
<tr>
<td>TFR Research Course 2016</td>
<td>7-11 March 2016</td>
<td>Milan, Italy</td>
</tr>
<tr>
<td>Education Week 2016</td>
<td>13-17 June 2016</td>
<td>Strasbourg, France</td>
</tr>
<tr>
<td>Education Week 2016</td>
<td>25-29 October 2015</td>
<td>Strasbourg, France</td>
</tr>
<tr>
<td>TFR Research Course 2017</td>
<td>Dates to be announced</td>
<td>Munich, Germany</td>
</tr>
<tr>
<td>TFR Research Course 2018</td>
<td>Dates to be announced</td>
<td>Izmir, Turkey</td>
</tr>
<tr>
<td>EUROSPINE 2016</td>
<td>5-7 October 2016</td>
<td>Berlin, Germany</td>
</tr>
<tr>
<td>EUROSPINE 2017</td>
<td>11-13 October 2017</td>
<td>Dublin, Ireland</td>
</tr>
</tbody>
</table>

facebook.com/EUROSPINE
twitter.com/EUROSPINESoc
twitter.com/EUROSPINE
www.eurospine.org
Table of Contents

Welcome Messages ...................................................................................................................... 4

Information on Scientific Programme .......................................................................................... 7

Scientific Programme Overview

Wednesday, 2 September and Thursday, 3 September 2015 ................................ 8

Friday, 4 September 2015 ...................................................................................... 9

Scientific Programme

Tuesday, 1 September 2015 ................................................................................................. 10

Pre-day course: Aging Spine ................................................................................................. 10

Pre-day course: Spinal Oncology ......................................................................................... 12

Wednesday, 2 September 2015 ..................................................................................... 14

Thursday, 3 September 2015 ....................................................................................... 22

Friday, 4 September 2015 ................................................................................................. 30

E-posters .................................................................................................................. 48
Dear colleagues,
Dear ladies and gentlemen,

The congress of the Spine Society of Europe, EUROSPINE, is the most important platform for exchanging the latest research results and innovations in the prevention and treatment of spinal disorders. The aim is to combine existing knowledge with the emerging technology and to develop and implement concepts – for the benefit of patients across Europe. Continuing this successful path together with your support is the formulated wish of EUROSPINE 2015 from 2–4 September, 2015 in Copenhagen.

This year, we are planning the official EUROSPINE 2015 evening as a large gathering for the entire spine community at the Copenhagen Opera House on the harborside in downtown Copenhagen – in other words, we would like to welcome scientists, physicians and industry representatives equally to this evening. An impressive view and culinary pleasures promise a special night – please support this with your participation!

Throughout the EUROSPINE 2015, we will provide you with an open atmosphere where it will be possible to network with experts within the spine field. We look forward to seeing you in Copenhagen where we hope you will join our discussion on how to improve our daily practices and the lives of spine patients.

Kind regards,

Finn Bjarke Christensen, MD
Institute of Clinical Medicine
University Hospital of Aarhus
Aarhus, Denmark

Martin Gehrchen, MD
Department of Orthopaedic Surgery
Rigshospitalet
National University Hospital of Copenhagen
Copenhagen, Denmark
Welcome Message from the President 2015

Dear friends, colleagues and spine specialists,

20 years! It will be the twentieth anniversary of the EUROSPINE congress in 2015, Copenhagen. EUROSPINE was the name used at the first conjoined meeting before the merging of two spine societies, European Spinal Deformity Society and European Spine Society. Since then the society has grown tremendously and achieved many successful activities.

It is my great honour and pride to welcome you to EUROSPINE, the Spine Society of Europe, at its annual scientific meeting in Copenhagen, Denmark to be held from 2–4 September, 2015.

The congress will include pre-meeting instructional courses, blindly selected best abstracts, debates, lunch symposia, keynote lecture and E-posters. The EUROSPINE programme committee worked very hard to achieve and surpass the academic standards that have been improved over the last 20 years. We aim to offer an open academic forum that will stimulate discussions on the latest scientific developments on prevention and treatment of spinal disorders.

I am sure that you will find EUROSPINE lunch symposia topics such as: “Adult deformity in the cervical spine. Treatment concepts”, “Neuromuscular and early onset scoliosis. Are new techniques better?”, “Anterior approach is back to stay?”, “Adjacent Segment Disease – Facts and Myths”, “The raise and fall of new technologies” quite interesting and appealing. “Spinal oncology” and “Aging spine” are the topics to be covered in pre-meeting courses. I would encourage you to participate to these high level state of the art courses.

Participants will also have the opportunity to meet and interact with our partners in the Spine Industry through exhibits and lunch industry workshops.

Our local hosts Finn Christensen and Martin Gehrchen have been working hard to assure the high quality and integrity already set in our flagship annual meeting. On behalf of the local hosts and the EUROSPINE society, I look forward to welcoming you to our annual meeting in Copenhagen 2–4 September, 2015. I strongly encourage you to become a member of the society to reap the many benefits of membership. You can become part of the future of leading edge knowledge and skills within the society.

Haluk Berk, MD
Dokuz Eylul University
School of Medicine
Izmir, Turkey
EUROSPINE Education

Education Week 2015
25-29 October 2015
Strasbourg, France

Education Week 2016
13-17 June 2016
Strasbourg, France

Advanced Spine Course in collaboration with EANS
Part 1:
6-8 September 2015
Innsbruck, Austria

Part 2:
2016, Dates and venue tba

2 Advanced Modules 2016
Dates to be announced
Strasbourg, France

www.eurospine.org
Debates
EUROSPINE 2015 Debates
There will be two debates about common, but hopefully stimulating topics with the intention to stimulate thinking and discussions on areas of controversy and to explore areas of consensus. The audience will be asked for their vote on the case management before and after the presentations to see if they could be persuaded to change their views as a result of the arguments presented.

Wednesday, 2 September 2015
10:30–11:15  Debate 1: Evidence-based practice: A way to reconcile science and the practitioner’s and patient’s perspectives, or just a pain in the neck?
Rachid Salmi, Bordeaux, France
Moderator: Finn B. Christensen, Aarhus, Denmark
Debate: Where do we go from here?
11:15–12:00  Debate 2: Traumatic central cord syndrome in patients without cervical spine fracture should be managed with urgent decom pressive surgery
Moderator: Selçuk Palaoğlu, Ankara, Turkey
For surgery: Tim Pigott, Liverpool, UK
Against surgery: Bernhard Jeanneret, Basel, Switzerland

E-posters
The E-posters will be accessible for the participants during the whole meeting in the exhibition area (Hall C1).

Presentation Types
All abstracts were graded by a minimum of four reviewers by means of a blind peer review process. Only about 20% of the submissions were accepted for podium presentation.
Regular presentations: 5 min. + 2 min. discussion
QuickFire presentations: 3 min. + 2 min. discussion

App-Rating: Each of the marked presentations shall be rated by the audience by assigning 1 (worst) to 5 (best) stars in following categories:
Topics, content, performance.

Best Podium Presentation: Will be evaluated within the Best of Show papers (Friday, 4 September 2015, 10:30–12:00). Again with the audiences’ support and rating.

Best of Outside-Europe Presentation: Will be evaluated within the lectures signed with this label with audience’s support and rating.

App-Voting: In marked presentations the audience is invited to vote on specific questions via the EUROSPINE App.
### Programme Overview

#### WEDNESDAY, 2 SEPTEMBER 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Plenary Hall</th>
<th>Auditorium 11</th>
<th>Auditorium 12</th>
<th>Workshop Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30–10:00</td>
<td>Opening &amp; Thoraco-Lumbar Spine, Degenerative I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00–10:30</td>
<td>Coffee break in the Exhibition Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30–12:00</td>
<td>Debates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00–14:00</td>
<td>EUROSPINE LUNCH SYMPOSIUM 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00–15:20</td>
<td>Cervical Spine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:20–15:50</td>
<td>Coffee break in the Exhibition Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:50–17:30</td>
<td>Trauma, Tumour</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Start: 17:30

Welcome Reception in the Exhibition Area

#### THURSDAY, 3 SEPTEMBER 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Plenary Hall</th>
<th>Auditorium 11</th>
<th>Auditorium 12</th>
<th>Workshop Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30–10:00</td>
<td>Degeneration, Scoliosis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00–10:30</td>
<td>Coffee break in the Exhibition Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30–12:00</td>
<td>Presidential Address, Medal and Award Lectures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00–14:00</td>
<td>EUROSPINE LUNCH SYMPOSIUM 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00–15:20</td>
<td>Thoraco-Lumbar Spine, Degenerative II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:20–15:50</td>
<td>Coffee break in the Exhibition Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:50–17:30</td>
<td>Thoraco-Lumbar Spine, Degenerative III</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17:30–18:30</td>
<td>EUROSPINE General Assembly (for members only)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Start: 20:00

OFFICIAL CONGRESS DINNER (The Royal Danish Opera House) – at own expense
## Programme Overview

**FRIDAY, 4 SEPTEMBER 2015**

<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30–10:00</td>
<td>Auditorium 11</td>
<td>Growing Spine</td>
</tr>
<tr>
<td>10:00–10:30</td>
<td></td>
<td>Coffee Break in the Exhibition Area</td>
</tr>
<tr>
<td>10:30–12:00</td>
<td>Auditorium 12</td>
<td>The Best of Show papers. The highest scored abstract submissions</td>
</tr>
<tr>
<td>12:00–14:00</td>
<td>Auditorium 12</td>
<td>EUROSPINE LUNCH SYMPOSIUM 5 – Adjacent Segment Disease – Facts and Myths</td>
</tr>
<tr>
<td>14:00–15:20</td>
<td>Auditorium 12</td>
<td>QUICKFIRE Thoraco-Lumbar Spine, Degenerative/Quicksilver: Basic Science</td>
</tr>
<tr>
<td>15:20–15:50</td>
<td>Auditorium 12</td>
<td>Coffee Break in the Exhibition Area</td>
</tr>
<tr>
<td>17:30</td>
<td>Workshop Rooms</td>
<td>Adjourn – End</td>
</tr>
</tbody>
</table>
Pre-day course Programme  
Tuesday, 1 September 2015

10:00  ■ Onsite Registration for pre-day courses

17:00–19:00  ■ EUROSPINE onsite Registration with a free drink when taking advantage of registering the evening beforehand!

Aging Spine

Room 20
Chairs
Luis Alvarez Galovich, Madrid, Spain
Pedro Berjano, Milan, Italy; Paul Heini, Bern, Switzerland; Sean Molloy, London, UK; Ferran Pellisé, Barcelona, Spain; Javier Pizones, Madrid, Spain; Felix Tome, Madrid, Spain; Frank Schwab, Booklyn, New York, US; Hans Wartenberg, Amsterdam, The Netherlands

Faculty
Luis Alvarez Galovich
Pedro Berjano, Milan, Italy; Paul Heini, Bern, Switzerland; Sean Molloy, London, UK; Ferran Pellisé, Barcelona, Spain; Javier Pizones, Madrid, Spain; Felix Tome, Madrid, Spain; Frank Schwab, Booklyn, New York, US; Hans Wartenberg, Amsterdam, The Netherlands

10:55  ■ Welcome & Course Objectives
Luis Alvarez Galovich

11:00  ■ Session I: Defining elderly. What differences them from the rest?
Moderator: Luis Alvarez Galovich

11:00  ■ Socio-economical problems of the osteoporotic patient
Javier Pizones

11:15  ■ Co-morbidity considerations in the elderly and their impact on the outcomes and complications
Hans Wartenberg

11:30  ■ Technical approaches to optimize fixation in osteoporotic bone
Luis Alvarez Galovich

11:45  ■ Q&A – Discussion Session

12:00  ■ Session II: Degenerative disease in elderly patients. Strategies and Pitfalls
Moderator: Ferran Pellisé

12:00  ■ Cost utility in the treatment of degenerative aging spine
Felix Tome

12:15  ■ Is really the less the best?
Javier Pizones
12:30 The role of XLIF in elderly patients with a degenerative disease. In the anterior approach coming back? *Pedro Berjano*

12:45 How do I manage an elderly patient with a degenerative disease *Sean Molloy*

13:00 Q&A – Discussion Session

13:15 Lunch Break

**14:15**  
**Session III: The State of Art in the management of osteoporotic vertebral fractures**  
*Moderator: Javier Pizones*

14:15 Are augmentation techniques really as good as placebo? Which augmentation technique is the best? *Pedro Berjano*

14:30 The adjacent fracture. Myth or reality? *Felix Tome*

14:45 What’s new in Vertebral Body Augmentation? *Luis Alvarez Galovich*

15:00 How do I manage the osteoporotic vertebral fracture? Is there a place for open surgery? *Paul Heini*

15:15 Q&A – Discussion Session

**15:30**  
**Session IV: Adult Deformity**  
*Moderator: Luis Alvarez Galovich*

15:30 Expected outcomes in aging degenerative scoliosis *Ferran Pellisé*

15:45 Degenerative Scoliosis – How Much Lordosis is Necessary? Are spinopelvics parameters applicable to elderly patients? *Frank Schwab*

16:00 Sacro-Pelvic Fixation. What is best? *Sean Molloy*

16:15 The adjacent level in deformities. A problem to solve *Frank Schwab*

16:30 Q&A – Discussion Session
Spinal Oncology

Room 6+7

Chairs Benny Dahl, Copenhagen, Denmark

Faculty Benny Dahl, Copenhagen, Denmark; Alistair Irwin, Newcastle Upon Tyne, UK; J. J. Verlaan, Utrecht, The Netherlands; Jeremy Reynolds, Oxford, UK; Alexander C. Disch, Berlin, Germany; Naresh Kumar, Singapore, Singapore

10:55 Welcome & Course Objectives
Benny Dahl

11:00 Session I: Epidemiology of spinal metastasis

11:00 Ten years with a centralized referral system
Benny Dahl

11:20 Experience from a newly established referral system
Alistair Irwin

11:40 Health related quality of life in patients with spinal metastasis
Benny Dahl

12:00 Q&A – Discussion Session

12:20 Session II: Surgical strategy in spinal metastasis

12:20 Pre-operative scoring systems in spinal metastasis
J. J. Verlaan

12:40 Surgical options and complications
Jeremy Reynolds

Note: Separate registration is needed for pre-day courses!
13:00  ■ Corpectomy – Should we do more?  
      *Alexander Disch*

13:20  ■ Q&A – Discussion Session

14:00  ■ Lunch Break

**15:00**  ■ Session III: Blood sparing strategies

15:20  ■ Minimal invasive surgery in spinal metastasis  
      *J. J. Verlaan*

15:40  ■ What’s the role of pre-operative embolization  
      *Benny Dahl*

16:00  ■ Use of salvage blood in metastatic spine surgery  
      *Naresh Kumar*

16:20  ■ Q&A – Discussion Session

from 17:15  Meeting Registrations and Free Drinks, Center Hall  
*Note: Separate registration is needed for pre-day courses!*
Wednesday, 2 September 2015

07:30  | Onsite Registration

08:30  | OPENING
Room: Plenary Hall
Finn B. Christensen, Aarhus, Denmark; Martin Gehrchen, Copenhagen, Denmark

08:33  | WELCOME ADDRESS
EUROSPINE 2015 President, Haluk Berk, Izmir, Turkey

08:36  | INTRODUCTION TO THE SCIENTIFIC PROGRAMME
The blinded peer review process of the programme committee
Thomas Blattert, Schwarzach, Germany, Chair Programme Committee 2015

08:40–10:00  | Thoraco-Lumbar Spine, Degenerative I
Room: Plenary Hall
Chairs: Haluk Berk, Izmir, Turkey; Thomas Blattert, Schwarzach, Germany

1  | ANNULAR REPAIR USING FIBROCHONDROCYTES SEEDED IN A CROSS-LINKED COLLAGEN GEL: IN VIVO OUTCOME IN A RODENT MODEL
Yu Moriguchi, Brandon Borde, Peter Grunert, Thamina Khair, Lawrence Bonassar, Roger Härtl
Weill Cornell Medical College, New York, US

2  | PESSIONISTIC BACK BELIEFS AND LACK OF EXERCISE: A RISKY COMBINATION FOR FUTURE SHOULDER, NECK, AND BACK PAIN
Anne F. Mannion, Urs Müller, C. Rolli, O. Tamcan, Achim Elfering
Spine Center, Schulthess Klinik, Zurich, Switzerland; Institute for Psychology, University of Bern, Switzerland; Institute for Evaluative Research in Orthopaedic Surgery, University of Bern, Switzerland

3  | THE PROGNOSIS OF L5 RADICULOPATHY AFTER REDUCTION AND INSTRUMENTED FUSION OF ADULT ISTHMIC HIGH-GRADE LUMBOSACRAL SPONDYLOLISTHESIS AND THE ROLE OF MULTIMODAL INTRAOPERATIVE NEUROMONITORING
Ralph T. Schär, Martin Sutter, Anne F. Mannion, Andreas Eggspühler, Dezső Jeszenszky, Tamas Fekete, Frank Kleinstück, Daniel Haschtmann
Department of Neurosurgery, Inselspital, University of Bern, Bern, Switzerland; Spine Center, Schulthess Clinic, Zurich, Switzerland

4  | MINI-OPEN VERSUS OPEN TRANSFORAMINAL INTERBODY FUSION FOR LUMBAR DEGENERATIVE DISORDERS: A COMPARATIVE EFFECTIVENESS STUDY
Frank S. Kleinstück, Daniel Haschtmann, Tamas F. Fekete, Dezső Jeszenszky, Anne F. Mannion
Schulthess Klinik, Zurich, Switzerland
5 GLOBAL TILT AND LUMBAR LORDOSIS INDEX: TWO PARAMETERS TO UNDERSTAND POSITIVE BALANCE ANALYSIS
Louis Boissiere, Jean-Marc Vital, Vincent Challier, Ahmet Alanay, Ferran Pellisé Urquiza, Francisco Javier Sánchez Pérez-Grueso, Emre Acaroglu, Frank Kleinstück, Ibrahim Obeid, ESSG European Spine Study Group
Spine Unit 1, Bordeaux University Hospital, Bordeaux, France; ESSG, Hospital Universitari Vall Hebron, Barcelona, Spain

6 THORACIC CURVE IN ADULT IDIOPATHIC SCOLIOSIS: A DIMINISHING PROBLEM WITH INCREASING AGE
Javier Pizones, Mar Pérez Martín-Buitrago, Francisco Javier Sánchez Pérez-Grueso, Ferrán Pellisé, Ahmet Alanay, Ibrahim Obeid, Frank Kleinstück, Emre Acaroglu, ESSG European Spine Study Group
Hospital Universitario de Getafe, Madrid, Spain

7 IDENTIFYING THE BEST TREATMENT IN ADULT SPINAL DEFORMITY (ASD): A DECISION ANALYSIS (DA) APPROACH
Emre Acaroglu, Aysun Çetinyurek-Yavuz, Umit Ozgur Guler, Selcen Pehlivan, Yasemin Yavuz, Montse Domingo-Sabat, Ferran Pellise, Francisco Javier Sánchez Pérez-Grueso, Ahmet Alanay, Frank Kleinstück, Ibrahim Obeid, ESSG Ankara Spine Center, Ankara, Turkey; Clinistats EU, Zurich, Switzerland; Hospital Universitari Vall d’Hebron, Barcelona, Spain; Acibadem Maslak Hospital, Istanbul, Turkey; Hospital Universitari La Paz, Madrid, Spain; Schultess Clinic, Zurich, Switzerland; Bordeaux University Hospital, Bordeaux, France

8 POSTERIOR VERTEBRAL COLUMN RESECTION (PVCR) FOR THE MANAGEMENT OF SHARP ANGULAR KYPHOTIC DEFORMITY IN ADULT POPULATION
Meric Enercan, Sinan Kahraman, Bahadir Gokcen, Sinan Yilar, Tunay Sanli, Erden Erturer, Cagatay Ozturk, Ufuk Talu, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul Florence Nightingale Hospital, Istanbul, Turkey

10:00–10:30  COFFEE BREAK IN THE EXHIBITION AREA

10:30–12:00  Debates
Room: Plenary Hall
Introduction: Ciaran Bolger, Dublin, Ireland

10:30  Debate 1: Evidence-based practice: A way to reconcile science and the practitioner’s and patient’s perspectives, or just a pain in the neck?
Rachid Salmi, Bordeaux, France
Moderator: Finn B. Christensen, Aarhus, Denmark
Debate: Where do we go from here?

11:15  Debate 2: Traumatic central cord syndrome in patients without cervical spine fracture should be managed with urgent decompressive surgery
Moderator: Selçuk Palaoğlu, Ankara, Turkey
For surgery: Tim Pigott, Liverpool, UK
Against surgery: Bernhard Jeanneret, Basel, Switzerland
12:00–14:00  

EUROSPINE LUNCH SYMPOSIA

12:00  
EUROSPINE LUNCH SYMPOSUM 1  
Room: Auditorium 11  
Adult deformity in the cervical spine. Treatment concepts  
*Chairs: Tobias Pitzen, Michael Ruf, Karlsbad, Germany*

12:15  
Welcome

12:25  
The Sagittal Balance stops at C7?  
*Mohammed Attallah Hasanain, Karlsbad, Germany*  
*Sulaiman Al-Habib, Riyadh-Olaya, Saudi Arabia*  
Discussion

12:50  
Cervical Spine kyphosis in young children  
*Michael Ruf, Karlsbad, Germany*  
Discussion

13:15  
Correction of cervical spine kyphosis in adults and adolescents  
*Tobias Pitzen, Karlsbad, Germany*  
Discussion

13:40  
Conclusion and Farewell by Michael Ruf and Tobias Pitzen

12:00  
EUROSPINE LUNCH SYMPOSUM 2  
Room: Auditorium 12  
Rehabilitation impact on spinal surgery  
*Chairs: Margareta Nordin, Romorantin, France; Finn B. Christensen, Aarhus, Denmark*

12:15  
Rehabilitation from a surgeon perspective  
*Finn B. Christensen, Aarhus, Denmark*

12:30  
When to start rehabilitation and return to work  
*Lisa G. Østergaard, Aarhus, Denmark*

12:45  
Impact of cognitive rehabilitation  
*Nanna Rolving, Silkeborg, Denmark*

13:00  
Rehabilitation after surgical decompression  
*Anne Mannion, Zurich, Switzerland*

13:15  
Rehabilitation after Herniated Disc Surgery  
*Alison McGregor, London, UK*

13:30  
Where do we go from here?  
*Panel discussion*
14:00–15:20  Cervical Spine
Room: Plenary Hall
Chairs: Tim Pigott, Liverpool, UK; Bernhard Jeanneret, Basel, Switzerland

9 CERVICAL KYPHOSIS DOES NOT IMPLY CERVICAL DEFORMITY: PREDICTING CERVICAL CURVATURE REQUIRED FOR HORIZONTAL GAZE BASED ON SPINAL GLOBAL ALIGNMENT AND THORACIC KYPHOSIS
Vincent Challier, Bassel Diebo, Jonathan Oren, Shaleen Vira, Barthelemy Liabaud, Renaud Lafage, Jensen Henry, Themistocles Protopsaltis, Frank Schwab, Virginie Lafage
NYU Hospital for Joint Diseases, New York, US

10 CERVICAL INTERBODY FUSION WITH STANDALONE LORDOTIC TANTALUM CAGES. CHANGES IN SAGITTAL ALIGNMENT. DO THE SUBSIDENCE HAVE CLINICAL IMPLICATIONS? A PROSPECTIVE LONG-TERM STUDY
Félix Tomé-Bermejo, Julián A. Morales-Valencia, Javier Moreno-Pérez, Angel R. Piñera, Luis Alvarez Galovich
Spine Department, Fundación Jiménez Díaz University Hospital, Madrid, Spain

11 PROSPECTIVE MULTICENTER ASSESSMENT OF EARLY COMPLICATION RATES ASSOCIATED WITH ADULT CERVICAL DEFORMITY (ACD) SURGERY IN 78 PATIENTS
Justin Smith, Christopher Shaffrey, Themistocles Protopsaltis, Peter Passias, Gregory Mundis, Robert Hart, Han Jo Kim, Christopher Ames
International Spine Study Group, Chicago, US

12 CERVICAL SPINE INTERVERTEBRAL DISC AND PARASPINAL MUSCLE CHANGES IN HUMANS AFTER 6-MONTH MICROGRAVITY EXPOSURE AND 30-DAY TERRESTRIAL RECOVERY
Douglas G. Chang, Robert M. Healey, Jacquelyn A. Holt, Brandon R. Macias, Alex J. Snyder, Jeffrey C. Lotz, Alan R. Hargens
University of California, San Diego and San Francisco, US

13 IS THE UNILATERAL STABILIZATION IN THE SUBAXIAL CERVICAL SPINE SUFFICIENT? A BIOMECHANICAL STUDY
Gregor Schmeiser, Christoph Schilling, T. M. Grupp, K. Püschel, Ralph Kothe
Schön Klinik Hamburg-Eilbek, Spinale Chirurgie, Hamburg, Germany

14 ASSESSMENT OF SWALLOWING FUNCTION USING EAT-10: A SWALLOWING ASSESSMENT TOOL
Chikato Mannoji, Masaaki Aramomi, Masao Koda, Takeo Furuya, Masazumi Murakami
Chiba Aoba Municipal Hospital, Chiba, Japan
15 4-YEAR RESULTS OF A PROSPECTIVE MULTI-CENTRE STUDY ON 200 SINGLE-LEVEL CERVICAL DISC PROSTHESES: CLINICAL AND RADIOGRAPHIC OUTCOME
Petr Suchomel, Hans Joerg Meisel, Ian Shackleford, Jussi Antinheimo, Steffen Sola, Bernhard Bruchmann, Jan Stulik, Fabrizio Caroli, Stefan Kroppenstedt, Christian Woiciechowsky
Neurocenter, Dpt. Neurosurgery, Regional Hospital Liberec, Czech Republic

16 CERVICAL TDR WITH MOBILE PROSTHESIS: MID-TERM CLINICAL ASSESSMENT AND RADIOLOGICAL ANALYSIS OF OPERATED AND ADJACENT SEGMENTS
Jacques Beaurain, Thierry Dufour, Jean Huppert, Pierre Bernard, Istvan Hovorka, Jean-Paul Steib
University Hospital Bocage central; Neurosurgery Department, 14 Rue Paul Gaffarel, Dijon, France

17 TOTAL DISC ARTHROPLASTY VERSUS ANTERIOR CERVICAL INTERBODY FUSION: USE OF THE SPINE TANGO REGISTRY TO SUPPLEMENT THE EVIDENCE FROM RCTS
Emin Aghayev, Anne Mannion, Christoph Röder, Lukas Staub
Institute for Evaluative Research in Medicine of the University of Bern, Switzerland

18 CLINICAL AND RADIOLOGICAL OUTCOME AT THE 10 YEAR FOLLOW UP OF TOTAL CERVICAL DISC REPLACEMENT
Christoph Mehren, Franziska Heider, Bernhard Zillner, Daniel Sauer, Christoph Siepe, Andreas Korge, H. Michael Mayer
Schön Klinik München Harlaching, Munich, Germany

15:20–15:50  COFFEE BREAK IN THE EXHIBITION AREA

15:50–17:30  Trauma, Tumour
Room: Plenary Hall
Chairs: Frank Kandziora, Frankfurt, Germany; Klaus Schnake, Fürth, Germany

19 FLOWCYTOMETRIC EVALUATION OF INTRAOPERATIVE SALVAGED BLOOD FILTERED WITH LEUCOCYTE DEPLETION FILTER IN METASTATIC SPINE TUMOURSURGERY
Naresh Kumar, Aye Sandar Zaw, Rishi Malhotra
National University Health System, Singapore, Singapore

20 IMMUNOGENICITY OF HUMAN INDUCED PLURIPOTENT STEM CELLS-DERIVED NEURAL STEM CELLS AS A CELL SOURCE OF CELL TRANSPLANTATION THERAPY FOR SPINAL CORD INJURY
Masahiro Ozaki, Go Itakura, Hiroki Iwai, Jun Kohyama, Akio Iwanami, Morio Matsumoto, Hideyuki Okano, Masaya Nakamura
Department of Orthopaedic Surgery, Keio University School of Medicine, Tokyo, Japan
21 EVALUATION OF TLICS FOR THORACOLUMBAR FRACTURES
Galateia Katzouraki, Spyridon Koufos, Giuseppe Lambros Morassi, Panayiotis Karampinas, Dimitrios Stergios Evangelopoulos, Spiros George Pneumaticos
3rd Department of Orthopaedic Surgery, University of Athens, KAT Hospital, Athens, Greece

22 TOWARDS THE DEVELOPMENT OF INTERNATIONAL DISEASE SPECIFIC OUTCOME INSTRUMENTS FOR SPINE TRAUMA: SURGEON REPORTED OUTCOME
Said Sadiqi, A. Mechteld Lehr, F. Cumhur Oner, AOspine Knowledge Forum Trauma
Department of Orthopaedics, University Medical Center Utrecht, The Netherlands

23 OPEN VERSUS PERCUTANEOUS INTRUMENTATION IN THORACOLUMBAR FRACTURES: MRI COMPARISON OF PARVERTEBRAL MUSCLES AFTER IMPLANT REMOVAL
Yann Philippe Charles, Yves Ntilikina, David Bahlau, Julien Garnon, Sébastien Schuller, Axel Walter, Erik André Saulleau, Mickael Schaeffer, Jean-Paul Steib
Service de Chirurgie du Rachis, Hôpitaux Universitaires de Strasbourg, France

24 TEMPORARY PEDICLE SCREW FIXATION FOR THORACOLUMBAR BURST FRACTURES. – COMPARATIVE STUDY WITH OR WITHOUT VERTEBROPLASTY –
Hiroyuki Aono, Keisuke Ishii, Hidekazu Tobimatsu, Yukitaka Nagamoto, Chiaki Horii, Motoki Iwasaki
Osaka National Hospital, Osaka, Japan

25 IMPLANT REMOVAL RESTORES MOBILITY AFTER FRACTURE OF THE THORACOLUMBAR SEGMENT. A RADIOSTEREOMETRIC STUDY
Paul Axelsson, Björn Strömqvist
Department of Orthopaedics, Skåne University Hospital, Malmö, Sweden

26 OSTEOPOROTIC THORACOLUMBAR JUNCTIONAL VERTEBRAL BODY FRACTURE WITH A SPINOUS PROCESS FRACTURE: ITS CLINICAL AND RADIOLOGIC SIGNIFICANCES
Tae-Hwan Kim
Hallym University Sacred Heart Hospital, Anyang City, Korea

27 THE VALUE OF BONE BIOPSY DURING PERCUTANEOUS VERTEBROPLASTY IN TREATMENT OF PRESUMED OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES
Bahadir Gokcen, Meric Enercan, Emel Kaya, Sinan Kahraman, Sinan Yilar, Mutlu Cobanoglu, Tunay Sanli, Erden Erturer, Cagatay Ozturk, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey
SAVE THE DATE

3rd EUROSPINE Spring Speciality Meeting

Trauma and Emergency Spine Surgery: Past, Present and Future

12–13 May 2016 • Park Inn by Radisson, Kraków, Poland

Abstract Submission Deadline: 31 December 2015

www.eurospinemeeting.com
www.eurospine-spring.com

UP TO THE MINUTE AND KEEPING YOU UPDATED!
28 THE ROLE OF SINS (SPINAL INSTABILITY NEOPLASTIC SCORE) SYSTEM TO PREDICT THE INSTABILITY IN METASTATIC SPINAL TUMORS
Sejun Park, ChongSuh Lee, Junyoung Lee, Sangsoo Kang, Wansseok Kim, Seongkee Shin, Kyungchung Kang
Samsung Medical Center, Seoul, Korea

29 CLINICAL AND RADIOLOGICAL OUTCOME AFTER TOTAL EN BLOC SPONDYLECTOMY AT THREE OR MORE LEVELS
Katsuhito Yoshioka, Hideki Murakami, Satoru Demura, Satoshi Kato, Moriyuki Fujii, Takashi Igarashi, Noritaka Yonezawa, Hiroyuki Tsuchiya
Department of Orthopaedic Surgery, Kanazawa University, Kanazawa, Japan

30 RESECTION OF VERTEBRAL OSTEOID OSTEOMAS IN FULL-ENDOSCOPIC TECHNIQUE IN ADOLESCENTS
Semih Özdemir, Patrick Hahn, Martin Komp, Harry Merk, Georgios Godolias, Sebastian Ruetten
Center for Spine Surgery and Pain Therapy; Center for Orthopaedics and Traumatology of the St. Elisabeth Group – Catholic Hospitals Rhein-Ruhr, St. Anna Hospital Herne, Marienhospital Herne University Hospital, Marien Hospital Witten, Germany

17:30 WELCOME RECEPTION
Exhibition Area
Thursday, 3 September 2015

08:30–10:00  Degenerative, Scoliosis
Room: Plenary Hall
Chairs: Stavros Stavridis, Thessaloniki, Greece; Martin Gehrchen, Copenhagen, Denmark

31 THE HISTOMORPHOLOGICAL CHANGE OF THE GROWTH PLATE UNDER ASYMMETRICAL LOADING IN PORCINE SCOLIOSIS MODEL
Xin Zheng, Yong Qiu, Xu Sun, Bangping Qian, Zezhang Zhu, Yang Yu, Bin Wang
From the Spine Surgery, Drum Tower Hospital, Nanjing University Medical School, Nanjing, China

32 PROXIMAL JUNCTIONAL KYPHOSIS: EFFECT OF MULTILEVEL POSTERIOR LIGAMENT DISSECTION AFTER POSTERIOR INSTRUMENTATION ON ADJACENT SEGMENT BIOMECHANICS
Tobias Lange, Raul Mayr, Georg Gosheger, Christian Heinrichs, Werner Schmölz, Tobias L. Schulte
Department of Orthopedics, University Hospital Münster, Münster, Germany

33 3D MOTION ANALYSIS USING PROVOCATION COMPUTED TOMOGRAPHY IN LUMBAR SPINAL STENOSIS WITH DEGENERATIVE SPONDYLOLISTHESIS BEFORE AND AFTER DECOMPRESSIVE SURGERY. A RANDOMISED PILOT STUDY COMPARING LAMINECTOMY TO BILATERAL LAMINOTOMY.
Peter Försth, Per Svedmark
Uppsala University, Stockholm Spine Center, Uppsala, Sweden

34 DOES THE FACET JOINT VIOLATION FOLLOWING TRANSPEDICULAR INSTRUMENTATION OF THE LUMBAR SPINE CAUSE ADJACENT SEGMENT PATHOLOGY OR NOT? A MATCHED CONTROL STUDY
Chang-Hoon Jeon, Nam-Su Chung, Han-Dong Lee
Ajou University School of Medicine, Suwon, Korea

35 PROTECTIVE EFFECTS OF ADJACENT SEGMENT DEGENERATION AFTER LUMBAR FUSION WITH POSTERIOR LIGAMENTS COMPLEX PRESERVED IN EIGHT-YEAR MINIMUM FOLLOW-UP
Liang Yan, Baorong He, Dingjun Hao
Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

36 PROPIONIBACTERIUM ACNES, HERNIATED DISC AND MODIC CHANGES. NO CORRELATION FOUND IN 80 PATIENTS
Laura Mathiesen, Anne Kirstine Hansen, Mikala Wang, Thomas Bender, Peter Lemche, Soeren Fruegaard, Malene Laursen
Regional Hospital Silkeborg; Center of Elective Surgery, Viborg, Denmark
37 THE LONG-TERM OUTCOME OF LUMBAR FUSION IN THE SWEDISH LUMBAR SPINE STUDY
Rune Hedlund, Christer Johansson, Olle Hägg, Peter Fritzell, Tycho Tullberg
Sahlgrenska University Hospital, Department of Orthopedics, Gothenburg, Sweden

38 REVISION SURGERY FOR RESOLVING LUMBAR INTERSPINOUS DEVICE FAILURE
Dong-Hwa Heo, Seung-Hwan Yoon, The Leon Wiltse Memorial Hospital, College of Medicine, Inha University, Gyeonggi-do, Korea

39 ASSOCIATED LUMBAR SCOLIOSIS DOES NOT AFFECT OUTCOMES IN PATIENTS UNDERGOING FOCAL MINIMALLY INVASIVE TRANSFORAMINAL LUMBAR INTERBODY FUSION (MISTLIF) FOR NEUROGENIC SYMPTOMS: A MINIMUM 2-YEAR FOLLOW-UP STUDY
Anupreet Bassi, Kae Sian Tay, William Yeo, Wai Mun Yue
Singapore General Hospital, Singapore, Singapore

40 ROLE OF LUMBAR INTERBODY FUSION IN ADULT SPINAL DEFORMITY SURGERIES: DOES THE NUMBER OF CAGES MATTER?
Vincent Fière, Evalina L. Burger, Michael S. Chang, Sean Molloy
Centre Orthopédique Santy, France; University of Colorado SOM, US, Sonoran Spine, US, NHS Royal National Orthopaedic Hospital, UK

41 CLINICAL DISCRIMINATION PROPERTIES OF THE SRS-SCHWAB CLASSIFICATION IN 292 NON-US ADULT SPINAL DEFORMITY PATIENTS
Dennis Hallager Nielsen, Lars Valentin Hansen, Casper Rokkjær Dragsted, Nina Caroline Peytz, Martin Gerhchen, Benny Dahl
Spine Unit, Department of Orthopaedic Surgery, Rigshospitalet, University of Copenhagen, Copenhagen, Denmark

10:00–10:30 COFFEE BREAK IN THE EXHIBITION AREA
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30–12:00</td>
<td>Presidential Address, Medal and Award Lectures</td>
</tr>
<tr>
<td>Room: Plenary Hall</td>
<td></td>
</tr>
<tr>
<td>Chairs: Michael Ogon, Vienna, Austria; Everard Munting, Biez, Belgium</td>
<td></td>
</tr>
<tr>
<td>10:30</td>
<td>Winner of the 2015 EUROSPINE Full Paper Award</td>
</tr>
<tr>
<td>AGE AND PRO-INFLAMMATORY GENE POLYMORPHISMS INFLUENCE ADJACENT SEGMENT DISC DEGENERATION MORE THAN FUSION DOES IN PATIENTS TREATED FOR CHRONIC LOW BACK PAIN</td>
<td></td>
</tr>
<tr>
<td>Ahmad Omair, Anne F. Mannion, Marit Holden, Gunnar Leivseth, Jeremy Fairbank, Olle Hägg, Peter Fritze, Jens I. Brox</td>
<td></td>
</tr>
<tr>
<td>1) Department of Orthopaedics, Oslo University Hospital-Rikshospitalet, Oslo, Norway;</td>
<td></td>
</tr>
<tr>
<td>2) Department of Research and Development, Spine Center Division, Schulpess Klinik, Zurich, Switzerland;</td>
<td></td>
</tr>
<tr>
<td>3) Norwegian Computing Centre, Blindern, Oslo, Norway;</td>
<td></td>
</tr>
<tr>
<td>4) Institute of Clinical Medicine, Neuromuscular Disorders Research Group, UiT the Arctic University of Norway, Tromsø, Norway;</td>
<td></td>
</tr>
<tr>
<td>5) Nuffield Orthopaedic Centre, University of Oxford, Oxford, UK;</td>
<td></td>
</tr>
<tr>
<td>6) Spine Center Göteborg, Gothenburg, Sweden;</td>
<td></td>
</tr>
<tr>
<td>7) Neuro-ortopedic center, Länssjukhuset Ryhov, Jönköping, Sweden;</td>
<td></td>
</tr>
<tr>
<td>8) Department of Physical Medicine and Rehabilitation, Oslo University Hospital, University of Oslo, Oslo, Norway</td>
<td></td>
</tr>
<tr>
<td>10:40</td>
<td>Winner of 2014/2015 Grammer/European Spine Journal Award</td>
</tr>
<tr>
<td>THE POTENTIAL ROLE OF HEAT SHOCK PROTEINS IN ACUTE SPINAL CORD INJURY</td>
<td></td>
</tr>
<tr>
<td>Yijun Zhou, Leilei Xu, Xinghua Song, Liwen Ding, Jiangtao Chen, Chong Wang, Yuling Gan, Xiaomeng Zhu, Yipin Yu, Qiuzhen Liang</td>
<td></td>
</tr>
<tr>
<td>EurSpine J (2014) 23:1480–1490</td>
<td></td>
</tr>
<tr>
<td>10:50</td>
<td>EUROSPINE Presidential Address</td>
</tr>
<tr>
<td>Responsibilities of Scientific Societies: EUROSPINE’s Future Focus</td>
<td></td>
</tr>
<tr>
<td>Haluk Berk, Izmir, Turkey</td>
<td></td>
</tr>
<tr>
<td>11:20</td>
<td>Society Update (TFR, Membership)</td>
</tr>
<tr>
<td>Margareta Nordin, Romorantin, France; Christoph J. Siepe, Munich, Germany</td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td>EUROSPINE Medal Lecture 2015</td>
</tr>
<tr>
<td>Love Your Job, or Die Trying</td>
<td></td>
</tr>
<tr>
<td>Jon Kjaer Nielsen, Author and Professional with a Master of Science in Engineering.</td>
<td></td>
</tr>
</tbody>
</table>
| For the past decade his focus has been on engineering company cultures instead of physical products, and he is passionate about creating happy and more successful workplaces.
<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
</table>
| 12:00 | **EUROSPINE LUNCH SYMPOSIUM 3**  
Room: Auditorium 11  
*Early Onset Scoliosis. Are new techniques better?*
*Chair: Hossein Mehdian, Nottingham, UK* |
| 12:15 | MAGEC rod  
*Ilkka Helenius, Helsinki, Finland*  
Discussion |
| 12:30 | Growth of the Spine and Thorax  
*Federico Canavese, Montpellier, France*  
Discussion |
| 12:45 | EOS Classification and Natural History  
*Muharrem Yazici, Ankara, Turkey*  
Discussion |
| 13:00 | Non-Operative Treatment Thoracic Insufficiency Syndrome  
*Martin Repko, Brno, Czech Republic*  
Discussion |
| 13:15 | Complications and Outcomes  
*Francisco Sanchez Perez Grueso, Madrid, Spain*  
Discussion |
| 13:30 | What is New on the Horizon for EONMS? When You Start Treatment for EONMS and What are the Options?  
*Hossein Mehdian, Nottingham, UK*  
Discussion |
| 12:00 | **EUROSPINE LUNCH SYMPOSIUM 4**  
Room: Auditorium 12  
*Anterior approach is back to stay?*  
*Chair: Pedro Berjano, Milan, Italy* |
| 12:15 | Introduction  
*Pedro Berjano, Milan, Italy*  
Discussion |
| 12:30 | Anterior surgery in primary degenerative conditions  
*Roberto Bassani, Milan, Italy*  
Discussion |
| 12:50 | Anterior surgery in revision  
*Sean Molloy, London, UK*  
Discussion |
13:10  Anterior surgery in adult deformity  
Pedro Berjano, Milan, Italy  
Discussion

13:30  Discussion with cases  
All

14:00–15:20  Thoraco-Lumbar Spine, Degenerative II  
Room: Plenary Hall  
Chairs: Matti Scholz, Frankfurt, Germany; Paulo Pereira, Porto, Portugal

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>COMBATING OXIDATIVE STRESS-INDUCED PREMATURE SENESCENCE (SIPS) IN THE INTERVERTEBRAL DISC (IVD)</td>
<td>Olga Krupkova, Sonia Rossi, Marian Hlavna, Juergen Klasen, Stephen J. Ferguson, Karin Wuertz-Kozak</td>
<td>D-HEST, ETH Zurich, Switzerland</td>
</tr>
<tr>
<td>43</td>
<td>REPEATED 3.0 TESLA MAGNETIC RESONANCE IMAGING AFTER CLINICALLY SUCCESSFUL LUMBAR DISC SURGERY</td>
<td>Clemens Weber, Øystein Petter Nygaard, Ole Solheim</td>
<td>Dept. of Neurosurgery, Stavanger University Hospital, Stavanger, Norway; Dept. of Neuroscience, Norwegian University of Science and Technology, Trondheim, Norway</td>
</tr>
<tr>
<td>44</td>
<td>EFFICACY AND SAFETY OF CONDOLIASE IN PATIENTS WITH LUMBAR DISC HERNIATION: A PROSPECTIVE RANDOMIZED CONTROLLED CLINICAL TRIAL</td>
<td>Kazuhiro Chiba, Yukihiro Matsuyama</td>
<td>Department of Orthopaedic Surgery, National Defense Medical College; Department of Orthopaedic Surgery, Hamamatsu University School of Medicine, The Japanese SI-6603 Study Group, Saitama, Japan</td>
</tr>
<tr>
<td>45</td>
<td>INCIDENTAL DURA LESIONS AND THE EFFECT ON OUTCOME AFTER DECOMPRESSION FOR LUMBAR SPINAL STENOSIS: RESULTS OF A MULTI-CENTER STUDY WITH 980 PATIENTS</td>
<td>Ralph Kothe, Markus Quante, Nils Engler, Franziska Heider, Christoph J. Siepe</td>
<td>Schön Klinik Hamburg Eilbek, Germany</td>
</tr>
<tr>
<td>46</td>
<td>DOES DAILY TOBACCO SMOKING AFFECT OUTCOMES AFTER MICRODECOMPRESSION FOR DEGENERATIVE CENTRAL LUMBAR SPINAL STENOSIS? A MULTICENTER OBSERVATIONAL REGISTRY-BASED STUDY</td>
<td>Charalampis Giannadakis, Sasha Gulati, Ulf Nerland, Ole Solheim</td>
<td>Department of Neurosurgery, St. Olavs University Hospital, Trondheim, Norway</td>
</tr>
<tr>
<td>47</td>
<td>COMPARISON OF DIBOTERMIN ALFA WITH AUTOGRAFT FOR SINGLE-LEVEL LUMBAR INTERBODY ARTHRODESIS USING POOLED INDIVIDUAL PATIENT DATA AND META-ANALYSIS</td>
<td>Kenneth Burkus, David Donnell, Koen van der Heijden, Fujian Song</td>
<td>The Hughston Clinic; Medtronic BioPharma B.V.; UEA Consulting Limited, Columbus, Georgia, US</td>
</tr>
</tbody>
</table>
48 DOES LORDOTIC ANGLE OF CAGE DETERMINE LUMBAR LORDOSIS IN POSTERIOR LUMBAR INTERBODY FUSION?
Young-Tae Kim, Kyu-Jung Cho
Inha University Hospital, Incheon, Korea

49 PLIF SURGERY WITH EITHER PEEK OR TITANIUM-COATED PEEK-CAGES. A RANDOMISED CLINICAL AND RADIOLOGICAL TRIAL
Klaus Schnake, Nikolai Fleiter, Andreas Pingel, Christoph Hoffmann, Matti Scholz, Frank Kandziora
Center for Spinal Therapy, Schön Klinik Nürnberg Fürth, Fürth, Germany

50 LEG PAIN IS A POSSIBLE SAGITTAL MALALIGNMENT CLINICAL PRESENTATION IN ADULT SPINAL DEFORMITY SURGERY
Mitsuru Takemoto, Louis Boissiere, Jean-Marc Vital, Ferran Pellisé, Francisco Javier Sanchez Perez-Grueso, Frank Kleinstück, Emre R. Acaroglu, Ahmet Alanay, ESSG European Spine Study Group
Spine Unit 1, Bordeaux University Hospital, Bordeaux, France

51 RISK FACTORS ASSOCIATED WITH MECHANICAL COMPLICATIONS INCLUDING PROXIMAL JUNCTIONAL FAILURE AFTER OSTEOTOMY FOR ADULT SPINAL DEFORMITY
Evalina Burger, Cameron Barton, Andriy Noshchenko, Vikas Patel, Christopher Cain, Christopher Kleck
University of Colorado, Anschutz Medical Campus, Aurora, US

15:20–15:50 COFFEE BREAK IN THE EXHIBITION AREA

15:50–17:30 Thoraco-Lumbar Spine, Degenerative III
Room: Plenary Hall
Chairs: Luis Alvarez Galovich, Madrid, Spain; Finn B. Christensen, Aarhus, Denmark

52 COMPARISON OF AN ANTI-INFLAMMATORY DRUG DELIVERY SYSTEM VERSUS MSC THERAPY TO CONTROL INFLAMMATION IN A PRO-INFLAMMATORY INTERVERTEBRAL DISC ORGAN CULTURE SYSTEM
Graciosa P. Q. Teixeira, Catarina L. Pereira, Karin Benz, Hans-Joachim Wilke, Anita Ignatius, Mario A. Barbosa, Raquel Goncalves, Cornelia Neidlinger-Wilke
Institute of Orthopaedic Research and Biomechanics, Center for Musculoskeletal Research, University of Ulm, Germany; Institute of Biomedical Engineering (INEB), Universidade de Porto, Portugal; Instituto de Ciências Biomédicas Abel Salazar (ICBAS), Universidade do Porto, Portugal; NMI Natural and Medical Sciences Institute at the University of Tuebingen, Reutlingen, Germany

53 DOES A PREOPERATIVE COGNITIVE-BEHAVIOURAL INTERVENTION AFFECT DISABILITY, PAIN BEHAVIOUR, PAIN AND RETURN TO WORK AFTER LUMBAR SPINAL FUSION SURGERY?
Nanna Rolving, Claus Vinther Nielsen, Finn B. Christensen, Randi Holm, Cody Erik Bünger, Lisa Gergersen Oestergaard
Aarhus University Hospital, Aarhus, Denmark
54 PREOPERATIVE COGNITIVE-BEHAVIOURAL PATIENT EDUCATION VERSUS STANDARD CARE AFTER LUMBAR SPINAL FUSION: ECONOMIC EVALUATION ALONGSIDE A RANDOMIZED CONTROLLED TRIAL
Nanna Rolving, Rikke Soegaard, Claus Vinther Nielsen, Finn B. Christensen, Cody Erik Bünger, Lisa Gregersen Oestergaard
Aarhus University Hospital, Aarhus, Denmark

55 QUALITY OF LIFE AND DISABILITY: CAN THEY BE IMPROVED BY ACTIVE POSTOPERATIVE REHABILITATION AFTER SPINAL FUSION SURGERY? A RANDOMISED CONTROLLED TRIAL WITH 12-MONTH FOLLOW-UP
Marko Neva, Outi Ilves, Joost Dekker, Liisa Pekkanen, Ilkka Marttinen, Kimmo Vihtonen, Kirsi Piitulainen, Salme Jarvenpaa, Arja Hakkinen
Department of Orthopaedics and Trauma, Tampere University Hospital, Tampere, Finland; Department of Health Sciences, University of Jyvaskyla, Jyvaskyla, Finland; Department of Physical Medicine and Rehabilitation, Central Finland Health Care District, Jyvaskyla, Finland; Department of Rehabilitation Medicine and Department of Psychiatry, VU University Medical Center, Amsterdam, The Netherlands; Department of Orthopaedics and Trauma, Central Finland Health Care District, Jyvaskyla, Finland

56 INDIVIDUAL COURSES OF LOW BACK PAIN IN ADULT DANES – A COHORT STUDY WITH 4- AND 8-YEAR FOLLOW-UPS
Tom Bendix, Lars Korsholm, Lise Hestbaek, Per Kjaer
Rigshospitalet, Glostrup Hospital, University of Copenhagen, Denmark

57 ADDRESSING LUMBAR DEGENERATIVE DISC DISEASE, A PROSPECTIVE 5-YEAR-FOLLOW-UP STUDY WITH AN UNCONSTRAINED TDR
Joel Delecrin, Jacques Beaurain, Jerome Allain, Herve Chataigner, Thierry Dufour, Jean Huppert, Alexandre Poignard, Marc Ameil, Jean-Paul Steib
CHU Hôtel-Dieu, Service de Chirurgie Orthopédique, 1 place Alexis Ricordeau, Nantes, France

58 FINAL RESULTS OF AN INTERNATIONAL MULTICENTER, PROSPECTIVE, OBSERVATIONAL TRIAL ON LUMBAR ARTHROPLASTY FOR SYMPTOMATIC DISC DISEASE
Richard Assaker, Karsten Ritter-Lang, Dominique Vardon, Stephane Litrico, Stephane Fuentes, Michael Putzier, Joerg Franke, Peter Jarzem, Pierre Guigui, Gerard Nakach, Jean Charles LeHuec
CHRU de Lille, Lille, France

59 AN 11-YEAR MINIMUM FOLLOW-UP OF THE CHARITE III LUMBAR DISC REPLACE-MENT FOR THE TREATMENT OF SYMPTOMATIC DEGENERATIVE DISC DISEASE
Yong Hai, Shibao Lu, Chao Kong
Orthopedic Surgery, Beijing Chaoyang Hospital, Capital Medical University of China, Beijing, China
60 GLOBAL SAGITTAL ANGLE (GSA): A STEP TOWARD FULL BODY ASSESSMENT FOR SPINAL DEFORMITY
Vincent Challier, Bassel Diebo, Shaleen Vira, Matthew Spiegel, Bradley Harris, Renaud Lafage, Barthelemy Liabaud, Jensen Henry, Frank Schwab, Virginie Lafage
NYU Hospital for Joint Diseases, New York, US

61 DEVELOPMENT OF VALIDATED COMPUTER BASED PREOPERATIVE PREDICTIVE MODEL FOR PROXIMAL JUNCTION FAILURE (PJF) OR CLINICALLY SIGNIFICANT PJK WITH 86% ACCURACY BASED ON 510 ASD PATIENTS WITH 2-YEAR FOLLOW-UP
Christopher Ames, Justin Smith, Frank Schwab, Amit Jain, Tamir Ailon, Eric Klineberg, Justin Scheer
International Spine Study Group, Chicago, US

62 PROSPECTIVE MULTICENTER ASSESSMENT OF COMPLICATION RATES ASSOCIATED WITH ADULT SPINAL DEFORMITY (ASD) SURGERY IN 291 PATIENTS WITH MINIMUM 2-YEAR FOLLOW-UP
Justin Smith, Eric Klineberg, Frank Schwab, Christopher Shaffrey, Shay Bess, Gregory Mundis, Han Jo Kim, Justin Scheer, Christopher Ames
International Spine Study Group, Chicago, US

63 DEVELOPMENT OF A PREOPERATIVE PREDICTIVE MODEL FOR INTRA- OR PERI-OPERATIVE MAJOR COMPLICATIONS WITH HIGH ACCURACY VALIDATED WITH 558 ASD PATIENTS
Christopher Ames, Justin Smith, Frank Schwab, Christopher Shaffrey, Gregory Mundis, Tamir Ailon, Eric Klineberg, Justin Scheer
International Spine Study Group, Chicago, US

17:30–18:30 EUROSPIINE GENERAL ASSEMBLY
Plenary Hall – members only

20:00 OFFICIAL CONGRESS DINNER
Attire: business/formal
Location: Opera House Copenhagen, Ekvipagemestervej 10, 1438 Copenhagen
64 RISK FACTORS OF SEVERE ADOLESCENT SCOLIOSIS TIED TO HTN
Dingjun Hao, En Xie
Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, China

65 THE ASSOCIATION BETWEEN SEVERITY OF SCOLIOSIS AND LUNG CLEARANCE INDEX (LCI) IN PATIENTS WITH ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS)
Anne Katrine Blyme, Birgitte Hanel, Martin Gehrchen, Kim G. Nielsen, Benny Dahl
Rigshospitalet, Copenhagen, Denmark

66 PRE-OPERATIVE MRI STUDY ON A CONTINUOUS SERIES OF ADOLESCENT IDIOPATHIC SCOLIOSIS: NEUROAXIAL ABNORMALITIES INCIDENCE AND ITS INFLUENCE ON SURGICAL TREATMENT
Laura Scaramuzzo, Fabrizio Giudici, Marino Archetti, Leone Minoia, Antonino Zagra
I.R.C.C.S. Galeazzi Orthopedic Institute, Milan, Italy

67 EFFECTS OF FREQUENCY OF DISTRACTION IN MAGNETICALLY-CONTROLLED GROWING ROD LENGTHENING ON OUTCOMES AND COMPlications
Caglar Yilgor, Kenneth Cheung, Kenny Kwan, Dino Samartzis, Ahmet Alanay, John Ferguson, Colin Nnadi, Ilkka Helenius, Muharrem Yazici, Gokhan Demirkiran, Behrooz Akbarnia
Acibadem University School of Medicine; The University of Hong Kong; Starship Children’s Hospital/Auckland Bone and Joint Surgery; Oxford University Hospitals; Turku University Central Hospital, Department of Paediatric Orthopaedic Surgery; Hacettepe University; Orthopaedic Surgery, University of California, San Diego, US

68 OUTCOME OF SCOLIOSIS SURGERY IN SEVERE CEREBRAL PALSY PATIENTS
Tobias Schulte, Klaas Beckmann, Georg Gosheger, Albert Schulze Bövingloh, Matthias Borowski, Ulf Liljenqvist, Viola Bullmann, Tobias Lange
University Hospital Münster, Department of Orthopedics, Münster, Germany

69 COMPARISON OF SEGMENTAL PEDICLE SCREWS VERSUS HYBRID CONSTRUCTS USING SUBLAMINAR WIRES FOR DEFORMITY CORRECTION IN CEREBRAL PALSY
Hossein Mehdian, Luigi Aurelio Nasto, Ana Belen Perez Romera, Oliver Stokes
The Centre for Spinal Studies and Surgery, Queen’s Medical Centre University Hospital, Nottingham, NG7 2UH, UK
70 WHICH RADIOLOGIC PARAMETERS ARE ASSOCIATED WITH DISC AND FACET DEGENERATION IN THE LUMBAR CURVE AFTER SELECTIVE THORACIC FUSION IN AIS: AN MRI STUDY WITH MINIMUM 10 YEARS FOLLOW UP
Sinan Kahraman, Meric Enercan, Bahadir Gokcen, Levent Ulusoy, Ayhan Mutlu, Tunay Sanli, Erden Erturer, Cagatay Ozturk, Ahmet Alanay, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

71 DEEP PARASPINAL MUSCLES IN IDIOPATHIC SCOLIOSIS: AN LECTROPHYSIOLOGICAL AND HISTOCHEMICAL STUDY
Martin Krbec, Josef Zámeník, Ivana Stetkarova
Department of Orthopedics and Traumatology, 3rd Faculty of Medicine, Charles University in Prague and Faculty Hospital Královské Vinohrady, Prague, Czech Republic

72 VARIANTS OF POC5 GENE IN ADOLESCENT IDIOPATHIC SCOLIOSIS IN FRENCH CANADIAN FAMILIES
Florina Moldovan, Shunmoogum A Patten, Soraya Barchi, Julie Couillard, Patrick Edery, Stefan Parent
CHU Sainte Justine and Faculty of Dentistry University de Montreal, Montreal, Canada; CRCHUM and Department of Neuroscience, Université de Montreal, Montreal, Canada; Hospices Civils de Lyon, Lyon, France; Inserm U1028, CNRS UMR5292, University Lyon, France

73 BENDING VS FULCRUM VS TRACTION X-RAY UNDER GENERAL ANESTHESIA (TRUGA) FOR EVALUATION OF FLEXIBILITY OF CURVES AND PREDICTION OF CORRECTION IN PATIENTS WITH AIS: WHICH IS BETTER?
Meric Enercan, Sinan Kahraman, Bahadir Gokcen, Mutlu Cobanoglu, Sinan Yilar, Tunay Sanli, Erden Erturer, Cagatay Ozturk, Ahmet Alanay, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

74 PLASTICITY OF WEDGE DEFORMITIES OF VERTEBRAL BODIES IN SKELETAL IMMATURE PATIENTS WITH ADOLESCENT IDIOPATHIC SCOLIOSIS WHO TREATED CORRECTIVE SPINAL SURGERY
Takahiro Makino, Takashi Kaito, Masafumi Kashii, Tsuyoshi Sugiura, Kazuomi Sugamoto, Hideki Yoshikawa
Department of Orthopaedic Surgery, Osaka University Graduate School of Medicine, Osaka, Japan

10:00–10:30 COFFEE BREAK IN THE EXHIBITION AREA
10:30–12:00

The ‘Best of Show’ papers. The highest scored abstract submissions

Plenary Hall

The 2015 Best Podium Award will be evaluated out of the eight presentations of this session.

The audience is asked to vote via the EUROSPINE App.

Chairs: Margareta Nordin, Romorantin, France; Philip J. Sell, Leicester, UK

- **75** GELATINE MATRIX WITH HUMAN THROMBIN DECREASES BLOOD LOSS IN ADOLESCENTS UNDERGOING POSTERIOR SPINAL FUSION FOR IDIOPATHIC SCOLIOSIS. A RANDOMIZED CLINICAL TRIAL
  Ilkka Helenius, Heli Keskinen, Johanna Syvänen, Olli Pajulo
  Department of Paediatric Orthopaedic Surgery, Turku University Central Hospital and University of Turku, Finland

- **76** HEALTH-RELATED QUALITY-OF-LIFE IN ADOLESCENT IDIOPATHIC SCOLIOSIS PATIENTS 25 YEARS AFTER TREATMENT
  Ane Simony, Steen Bach Christensen, Leah Y. Carreon, Mikkel O. Andersen
  Middelfart Hospital, Middelfart, Denmark

- **77** STUDY OF LUMBAR MULTIFIDUS MUSCLES IN PATIENTS WITH CHRONIC LOW BACK PAIN AND IN DEGENERATIVE SCOLIOSIS HUMAN – A BLINDED RANDOMIZED CONTROLLED TRIAL (RCT)
  Dingjun Hao, En Xie
  Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

- **78** EFFICACY AND SAFETY OF PROPHYLACTIC LARGE DOSE OF TRANEXAMIC ACID IN ADOLESCENT WITH IDIOPATHIC SCOLIOSIS SURGERY: A PROSPECTIVE, RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED STUDY
  Dingjun Hao, En Xie
  Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

- **79** TLIF VERSUS INSTRUMENTED POSTEROLATERAL FUSION (PLF). A 5–10 YEARS FOLLOW UP – LONG TERM RESULTS FROM AN RCT
  Kristian Høy, Kamilla Truong, Thomas Andersen, Cody Bünger
  Aarhus University Hospital, Aarhus, Denmark

- **80** GUIDELINES FOR NON-SURGICAL AND SURGICAL MANAGEMENT OF OSTEOPOROTIC VERTEBRAL BODY FRACTURES
  Thomas Roger Blattert, Klaus John Schnake, Oliver Gonschorek, and the Working Group Osteoporotic Fractures of the German Trauma Society
  Schwarzach Orthopedic Clinic, Schön Klinik Nürnberg Fürth, BGU Murnau, Germany
81 SELECTIVE APPLICATION OF INTRAWOUND VANCOMYCIN POWDER WITH USE OF FIBLIN GLUE AND/OR INTRAVENOUS DAPTMYCIN FOR OPEN POSTERIOR THORACIC/LUMBAR ARTHRODESIS
Kotaro Satake, Tokumi Kanemura, Hidetoshi Yamaguchi, Naoki Segi
Konan Kosei Hospital, Konan, Japan

82 TWO-LEVEL CERVICAL DISC ARTHROPLASTY VS. ACDF: A PROSPECTIVE, RANDOMIZED, CONTROLLED MULTICENTER CLINICAL TRIAL WITH 5-YEAR RESULTS
Matthew F. Gornet, Todd Lanman, Jeffrey McConnell, J. Kenneth Burkus, Randall Dryer, Scott Hodges
The Orthopedic Center of St. Louis, US

11:35 Keynote Lecture: Why still pain despite technically perfect spine surgery?
Gunilla Brodda Jansen, Rehab Medicine/Pain Management, Karolinska Institute, Stockholm, Sweden; Helena Brisby, Orthopaedic Surgery, University of Gothenburg, Gothenburg, Sweden

11:55 Announcement of the Best Podium Award
Margareta Nordin, Romorantin, France; Philip J. Sell, Leicester, UK

12:00–14:00 EUROSPINE LUNCH SYMPOSIA

12:00 EUROSPINE LUNCH SYMPOSIUM 5
Room: Auditorium 11
Adjacent Segment Disease – Facts and Myths
Chair: Klaus J. Schnake, Fürth, Germany

12:15 Facts about adjacent segment disease (ASD)
Dominique Rothenfluh, Oxford, UK
Discussion

12:40 Is TDR/dynamic stabilization the answer to ASD?
Jean Charles LeHuec, Bordeaux, France
Discussion

13:05 Can a balanced spine develop ASD?
Claudio Lamartina, Milan, Italy
Discussion

13:30 How to avoid ASD in the cervical spine
Ralph Kothe, Hamburg, Germany
Discussion
12:00  EUROSPINE LUNCH SYMPOSIUM 6
Room: Auditorium 12
The Raise and Fall of New Technologies
Chair: Philip J. Sell, Leicester, UK

12:15  Introduction: The problem and challenges  
Philip J. Sell, Leicester, UK
Discussion

12:30  Scoliosis and the lessons to learn  
Ferran Pellisé, Barcelona, Spain
Discussion

12:50  Big data: Does it help us?  
Chris Roeder, Bern, Switzerland
Discussion

13:10  Cervical and lumbar surgery: The coming and going  
Ciaran Bolger, Dublin, Ireland
Discussion

13:40  Can we change the future?  
All
Discussion

14:00–15:20  CONCURRENT SESSIONS  
(QUICKFIRES – Short Communications)

14:00–15:20  Basic Science
Room: B3 M1/2
Chairs: Karin Würtz-Kozak, Zurich, Switzerland; Cornelia Neidlinger-Wilke, Ulm, Germany

- QF1  MODELLING THE FAILURE MECHANISM OF THE ANNULUS FIBROSUS  
Marlène Mengoni, Alison Jones, Nagitha Wijayathunga, Ruth Wilcox
Institute of Medical and Biological Engineering—University of Leeds, Leeds, UK

- QF2  TOTAL DISC REPLACEMENT USING TISSUE-ENGINEERED INTERVERTEBRAL DISCS IN A CANINE MODEL  
Yu Moriguchi, Jorge Mojica Santiago, Peter Grunert, Rodrigo Navarro, Thamina Khair, Lawrence Bonassar, Roger Härtl
Weill Cornell Medical College, New York, US

- QF3  DECREASED SCIATIC NERVE MOVEMENT IN PEOPLE WITH POSTOPERATIVE RESIDUAL LEG SYMPTOMS FOLLOWING DISCECTOMY FOR LUMBAR INTERVERTEBRAL DISC DISORDER  
Gary Shum, Sally Cinnamonond, Andrew Clarke, Daniel Chan, Mike Hutton, Rohan Chauhan, Jon Marsden
Plymouth University, Plymouth, UK
QF4  IS THERE ANY CORRELATION BETWEEN PATHOLOGICAL PROFILE OF FACET JOINTS AND CLINICAL FEATURE IN PATIENTS WITH THORACOLUMBAR KYPHOSIS SECONDARY TO ANKYLOSING SPONDYLITIS? AN IMMUNOHISTOCHEMICAL INVESTIGATION
Bangping Qian, Mingliang Ji, Jun Hu, Yong Qiu, Saihu Mao
Spine Surgery, the Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

QF5  STUDY OF NEURAL CONNECTIVITY USING DTI-TRACTOGRAPHY OF THE SENSORIMOTOR NETWORK IN IDIOPATHIC SCOLIOSIS
Julio Domenech, Angel Alberich-Bayarri, Luis Martí-Bonmatí, Gracián García-Martí, María De la Iglesia-Vayá, Jose Maria Tormos, Álvaro Pascual-Leone
Hospital Arnau de Vilanova, University Cardenal Herrera CEU, Valencia, Spain

QF6  INVESTIGATION ON THE PROGNOSTIC VALUE OF BIOCHEMICAL MARKERS IN THE CEREBROSPINAL FLUID FOR THE FUNCTIONAL OUTCOME OF THE SPINAL CORD INJURED PATIENTS
Laura Calzà, Mercedes Fernandez, Rita Capirossi, Roberto Montecvch, Nozha Borjini, Jacopo Bonavita, Tiziana Giovannini, Gian Piero Belloni, Salvatore Ferro, Giovanni Gordini
Health Sciences and Technologies – Interdepartmental Center for Industrial Research, University of Bologna, Italy; Bologna Local Health Authority Intensive Care Unit, EMS and Trauma Centre, Maggiore Hospital, Bologna, Italy; Montecatone Rehabilitation Institute SpA, Imola, Italy; Emilia-Romagna Region Health Authority – Department of Hospital Services, Bologna, Italy

QF7  THE MECHANISM OF LIGAMENTUM FLAVUM HYPERTROPHY: INTRODUCING ANGIogenesis AS A CRITICAL LINK THAT COUPLes MECHANICAL STRESS AND HYPERTROPHY
Hong Joo Moon, Junseok Hur, Joohan Kim, Youn-Kwan Park
Korea University Guro Hospital, Seoul, Korea

QF8  LEVEL-SPECIFIC DIFFERENCES IN MIGRATION OF INSTANTANEOUS CENTRES OF ROTATION (ICR) OF LUMBAR INTERVERTEBRAL JOINTS DURING LIFTING
Ameet Aiyangar, Liying Zheng, William Anderst, Bernhard Weisse, Xudong Zhang
EMPA, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; University of Pittsburgh, Pittsburgh, PA, US

QF9  AUGMENTATION OF PEDICLE SCREWS WITH A SELF-CURING ELASTOMERIC MATERIAL
Werner Schmoelz, Alexander Keiler, Marko Konschake, Nicola Marotta, Alessandro Gasbarrini
Medical University Innsbruck, Innsbruck, Austria
**QF10** DOES THE TIMING OF CEMENT APPLICATION AND REPOSITION EFFECT PEDICLE SCREW ANCHORAGE?
Luis Alvarez, Christian Hainrich, Werner Schmoelz, Felix Tome, Angel R. Piñera, Marta Martin-Fernandez, Javier M. Duart
Fundación Jimenez Diaz, Madrid, Spain

**14:00–15:20** Cervical Spine
Room: B3 M3/4
*Chairs: Serdar Kahraman, Istanbul, Turkey; Emre Acaroglu, Ankara, Turkey*

**QF11** NOVEL CERVICAL ANGULAR MEASURES ACCOUNT FOR BOTH UPPER CERVICAL COMPENSATION AND SAGITTAL ALIGNMENT
Christopher Ames, Themistocles Protopsaltis, Renaud Lafage, Daniel Sciubba, Robert Hart, Justin Smith, Christopher Shaffrey, Frank Schwab
International Spine Study Group

**QF12** CERVICAL SPINE BALANCE IN SCHEUERMANN DISEASE
Piotr Janusz, Marcin Tyrakowski, Tomasz Kotwicki, Kris Siemionow
Department of Orthopaedic Surgery University of Illinois at Chicago, Chicago, IL, US; Department of Orthopedics, Pediatric Orthopedics and Traumatology, The Centre of Postgraduate Medical Education in Warsaw, Poland; Spine Disorders Unit, Department of Pediatric Orthopaedics and Traumatology, University of Medical Sciences, Poznan, Poland

**QF13** REGIONAL THORACIC AND LUMBAR SAGITTAL COBB ANGLE CHANGES AND UIV DETERMINE EVOLUTION OF CERVICAL ALIGNMENT AFTER ASD SURGERY: SERIES OF 171 PATIENTS WITH 2 YEAR FOLLOW UP
Christopher Ames, Amit Jain, Daniel Sciubba, Han Jo Kim, D. Kojo Hamilton, Justin Scheer, Brian Neuman
International Spine Study Group

**QF14** KYPHOPLASTY C2: INDICATIONS AND SURGICAL TECHNIQUE
Ahmed Shawky, Ali Ezzati
Helios Klinikum Erfurt, Erfurt, Germany; Assiut University Hospitals, Assiut, Egypt

**QF15** ALLOGRAFT VERSUS AUTOGRAFT FOR POSTERIOR ATLANTOAXIAL FUSION WITH SCREW-ROD SYSTEM: A PROSPECTIVE COMPARATIVE STUDY
Da-Geng Huang, Xin-Liang Zhang, Xiao-Dong Wang, Ding-Jun Hao, Bao-Rong He, Tian-Jiang Liu, Qi-Ning Wu, Hua Guo
Department of Spine Surgery, Honghui Hospital, Xi’an Jiaotong University Health Science Center, Xi’an, China

**QF16** CLINICAL APPLICATION OF C1 PEDICLE SCREW AND LATERAL MASS SCREW FOR ATLANTOAXIAL INSTABILITY PATIENTS WITH A NORMAL C1 POSTERIOR ARCH: A PROSPECTIVE, DOUBLE-BLIND, RANDOMIZED CONTROLLED TRIAL
Liang Yan, Baorong He, Dingjun Hao
Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China
QF17  SAFETY AND ACCURACY OF CT-REGION MATCHING NAVIGATED PEDICLE SCREW INSTRUMENTATION OF THE SUBAXIAL CERVICAL AND CERVICOThorACIC SPINE
Yu-Mi Ryang, Niels Buchmann, Jens Lehmberg, Jens Gempt, Bernhard Meyer
Department of Neurosurgery, Klinikum rechts der Isar, Technical University Munich, Munich, Germany

QF18  SURGICAL TREATMENT OF LOWER CERVICAL FRACTURE-DISLOCATIONS WITH SPINAL CORD INJURIES BY ANTERIOR APPROACH. FIVE-TO 15-YEARS FOLLOW-UP
Hua Guo, Biao Wang
Honghui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

QF19  TITANIUM ION LEVELS IN PATIENTS WITH METAL-ON-METAL CERVICAL DISC ARTHROPLASTY: A PROSPECTIVE STUDY UP TO 84 MONTHS
Matthew F. Gornet, Vaneet Singh, Francine W. Schranck, Anastasia K. Skipor, J. J. Jacobs
The Orthopedic Center of St. Louis, Spine Research Center, St. Louis, US

QF20  QUALITY OF LIFE AFTER CERVICAL DISC ARTHROPLASTY TO TREAT DEGENERATIVE DISC DISEASE: TWO YEAR RESULTS OF AN INTERNATIONAL PROSPECTIVE, MULTICENTER, OBSERVATIONAL STUDY (NTC00875810)
Saleh Baeesa, Ronai Marton, Jan Stulik
Faculty of Medicine King Abdulaziz University, Jeddah, Saudi Arabia

QF21  BRYAN DISC ARTHROPLASTY VERSUS ANTERIOR CERVICAL DISCECTOMY AND FUSION FOR THE TREATMENT OF CERVICAL DISC DISEASE. A REVIEW OF LEVEL I-II RANDOMIZED CLINICAL TRIALS INCLUDING CLINICAL OUTCOMES
Eduardo Hevia, Maria Aragonés, Alberto Caballero, Carlos Barrios
Spine Surgery Unit, Hospital La Fraternidad-Muprespa, Madrid, Spain; Institute for Research on Musculoskeletal Disorders, Valencia Catholic University, Valencia, Spain

QF22  DOES PREOPERATIVE DISC HEIGHT AFFECT POSTOPERATIVE MOTION AFTER CERVICAL TOTAL DISC REPLACEMENT? ANALYSIS OF PROSPECTIVE CLINICAL TRIAL WITH 2-YEAR FOLLOW-UP
Avinash Patwardhan, Gerard Carandang, Leonard Voronov, Robert Havey, Carl Lauryssen, Domagoj Coric, Thomas D immig, David Musante
Loyola University Chicago, Chicago, Illinois, US; Edward Hines Jr. VA Hospital, Nines, Illinois, US

QF23  CHARACTERISTICS OF PICA END VERTEBRAL ARTERY: AS ANATOMICAL VARIATION, AND POTENTIAL RISK FOR CERVICAL SPINE SURGERY
Takeshi Aoyama, Naoshi Obara
Spine Center, Department of Orthopaedic Surgery, Teine Keijinkai Hospital, Sapporo, Japan
QF24  COMPARISON OF CAGE WITH LOCAL BONE GRAFT AND ILIAC BONE GRAFT IN ANTERIOR CERVICAL DISCECTOMY AND FUSION (ACDF): A PROSPECTIVE STUDY
Zhili Liu, Xu Xiong, Jiaming Liu
Department of Orthopedics Surgery, the First Affiliated Hospital of Nanchang University, Nanchang, China

QF25  THE DURATION OF SYMPTOMS AND CLINICAL OUTCOMES IN PATIENTS UNDERGOING ANTERIOR CERVICAL DISCECTOMY AND FUSION FOR DEGENERATIVE DISC DISEASE AND RADICULOPATHY
Alan Villavicencio, Sigita Burneikiene, Lee Nelson, Alexander Mason, Sharad Rajpal
Boulder Neurosurgical Associates, Justin Parker Neurologic Institute, Boulder, Colorado, US

14:00–15:20  Thoraco-Lumbar Spine, degenerative
Room: Plenary Hall
Chairs: Joerg Franke, Dortmund, Germany; Martin Repko, Brno, Czech Republic

QF26  SHORT FORM OF THE DISTRESS AND RISK ASSESSMENT METHOD: DEVELOPMENT AND VALIDATION
Aron Lazary, Julia Szita, Zsolt Szövérfi, Peter Pal Varga
National Center for Spinal Disorders, Budapest, Hungary

QF27  DOES THE ADDITION OF CLONIDINE TO LUMBAR NERVE ROOT BLOCKS IMPROVE OUTCOME. A RANDOMISED, PROSPECTIVE, SINGLE BLINDED CONTROLLED PILOT STUDY
Patrick Hourigan, Helen Challinor, Sarah Whitehouse, Andrew Clarke
Royal Devon and Exeter Hospital, Exeter, UK

QF28  PREOPERATIVE FIBRINOGEN PLASMA CONCENTRATION BUT NOT FACTOR XIII ACTIVITY PREDICTS BLEEDING IN LUMBAR SPINAL FUSION PATIENTS
Malin Carling, Anders Jeppsson, Bengt Eriksson, Helena Brisby
Dept. of Orthopaedics, Institute of Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

QF29  TIMING OF TREATMENT OF CAUDA EQUINA SYNDROME AT A NATIONAL TREATMENT CENTRE
Daryl Blades, Gavin Heyes, Katie Jess, Niall Eames
Royal Victoria Hospital Belfast, Belfast, UK

QF30  TWO YEAR OUTCOMES OF PROSPECTIVE RANDOMIZED TRIAL COMPARING LUMBAR DECOMPRESSION WITH OR WITHOUT INTERLAMINAR STABILIZATION
Michael Rauschmann, Matteo Bonsanto, Joerg Franke, Steffen Sola
Department of Spine Surgery, Frankfurt, Germany
QF31 PREDISPOSING FACTORS FOR INTRAOPERATIVE ENDPLATE INJURY OF MINIMALLY INVASIVE LATERAL INTERBODY FUSION
Kotaro Satake, Tokumi Kanemura, Hidetoshi Yamaguchi, Naoki Segi
Konan Kosei Hospital, Konan, Japan

QF32 RECIPROCAL CHANGES ASSESSMENT IN ADJACENT MOBILE LEVEL FOLLOWING MONOSEGMENTAR INTERBODY FUSION
Enrique Vargas, Rodrigo Amaral, Luis Marchi, Leonardo Oliveira, Fernanda Fortti, Etevaldo Coutinho
Instituto de Patologia da Coluna, São Paulo, Brazil

QF33 RHBMP-2-INDUCED RADICULITIS IN TRANSFORAMINAL LUMBAR FUSION PATIENTS: RELATIONSHIP TO DOSE
Alan Villavicencio, Sigita Burneikiene
Boulder Neurosurgical Associates, Justin Parker Neurologic Institute, Boulder, Colorado, US

QF34 AN OBSERVATIONAL STUDY ON THE OUTCOME AFTER SURGERY FOR LUMBAR DISC HERNIATION IN ADOLESCENTS COMPARED TO ADULTS BASED ON THE SWEDISH SPINE REGISTER
Tobias Lagerbäck, Peter Elkan, Hans Möller, Anna Grauers, Elias Diarbakri, Paul Gerdhem
Karolinska Institutet and Karolinska University Hospital, Stockholm, Sweden

QF35 CLASSIFICATION OF THE SAGITTAL PLANE BY INTEGRATING ALIGNMENT, BALANCE AND COMPENSATION
Dominique A. Rothenfluh, Jeremy Reynolds, Dennis Dominguez
Oxford University Hospitals NHS Trust, University of Oxford, Oxford, UK

QF36 THE RELATIONSHIPS BETWEEN THE SRS-SCHWAB CLASSIFICATION MODIFIERS AND THE ODI SCORE ARE ROBUST TO CONFOUNDING
Dennis Hallager Nielsen, Lars Valentin Hansen, Casper Rokkjær Dragsted, Nina Caroline Peytz, Martin Gerhchen, Benny Dahl
Spine Unit, Department of Orthopaedic Surgery, Rigshospitalet, University of Copenhagen, Copenhagen, Denmark

QF37 SPINAL FUSION TERMINATING AT L5 IN ADULT SCOLIOSIS: FACTORS ASSOCIATED WITH SUBSEQUENT EXTENSION OF THE FUSION TO THE SACRUM
Santo Creaco, Anne F. Mannion, Dezső Jeszenszky, Frank S. Kleinstück, Daniel Haschtmann, Tamas F. Fekete
Spine Center, Schulthess Klinik, Zurich, Switzerland; School of Specialization in Orthopedic and Traumatology Surgery, University of Messina, Messina, Italy

QF38 RISK FACTORS ASSOCIATED WITH ROD FRACTURE AFTER OSTEOTOMY FOR ADULT SPINAL DEFORMITY
Evalina Burger, Cameron Barton, Andriy Noshchenko, Vikas Patel, Christopher Cain, Christopher Kleck
University of Colorado, Anschutz Medical Campus, Aurora, US
QF39  PROSPECTIVE MULTICENTER ASSESSMENT OF INTRAOPERATIVE AND PERIOPERATIVE COMPLICATION RATES ASSOCIATED WITH ADULT SPINAL DEFORMITY (ASD) SURGERY IN 558 PATIENTS
Justin Smith, Eric Klineberg, Frank Schwab, Christopher Shaffrey, Shay Bess, Gregory Mundis, Han Jo Kim, Justin Scheer, Christopher Ames
International Spine Study Group

QF40  EFFECT OF TREATMENT COMPLICATIONS ON THE OUTCOMES IN ADULT SPINAL DEFORMITY (ASD): A DECISION ANALYSIS (DA) APPROACH
Emre Acaroglu, Umit Ozgur Guler, Aysun Cetinyurek-Yavuz, Selcen Pehlivan, Yasemin Yavuz, Montse Domingo-Sabat, Ferran Pellise, Ahmet Alanay, Francesco Sanchez Perez Grueso, Frank Kleinstück, Ibrahim Obeid, ESSG
Ankara Spine Center, Ankara Turkey; Clinistats EU, Zurich, Switzerland, Hospital Universitari Vall d’Hebron, Barcelona, Spain; Acibadem Maslak Hospital, Istanbul, Turkey; Hospital Universitari La Paz, Madrid, Spain; Schultess Clinic, Zurich, Switzerland, Bordeaux University Hospital, Bordeaux, France

14:00–15:20  Growing Spine
Room: B3 M9/10
Chairs: Thomas Andersen, Copenhagen, Denmark; Hossein Mehdian, Nottingham, UK

QF41  PROVIDENCE NIGHTTIME BRACING, IN TREATMENT OF ADOLESCENT IDIOPATHIC SCOLIOSIS
Ane Simony, Inge Beuschau, Lena Quisth, Mikkel O. Andersen
Middelfart Hospital, Middelfart, Denmark

QF42  THE PREVALENCE OF INTRASPINAL ANOMALIES IN INFANTILE AND JUVENILE PATIENTS WITH PRESUMED IDIOPATHIC SCOLIOSIS: A MRI-BASED ANALYSIS OF 504 PATIENTS
Zezhang Zhu, Wen Zhang, Zhen Liu, Xu Sun, Yong Qiu
Spine Surgery, the Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

QF43  DOES PEDICULE SCREW FIXATION UNDER AGE FIVE CAUSE SPINAL CANAL NARROWING? A CT STUDY WITH MINIMUM 5 YEARS FOLLOW-UP
Sinan Kahraman, Meric Enercan, Mutlu Cobanoglu, Levent Ulusoy, Ayhan Mutlu, Tunay Sanli, Bahadir Gokcen, Erden Erturer, Cagatay Ozturk, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

QF44  A SIMPLE METHOD FOR ASSESSING ROTATIONAL FLEXIBILITY IN ADOLESCENT IDIOPATHIC SCOLIOSIS: MODIFIED ADAM’S FORWARD BENDING TEST
Alpaslan Senkoylu, Mustafa Ilhan, Necdet Altun, Dino Samartzis, Keith Luk
Gazi University, Orthopaedics and Traumatology, Ankara, Turkey
QF45  SLIDING-GROWING ROD TECHNIQUE (SGRT) IN THE TREATMENT OF EARLY ONSET SCOLIOSIS &#8211; MORE THAN 2 YEARS OF FOLLOW-UP
Meric Enercan, Sinan Kahraman, Bahadir Gokcen, Tunay Sanli, Sinan Yilar, Erden Erturer, Cagatay Ozturk, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

QF46  MAGNETICALLY CONTROLLED EXTENSION DEVICES: DOES IT REALLY DO EXACTLY WHAT IT SAYS?
Daniel Winson, Kar Teoh, Narendra Rath, Sashin Ahuja
University Hospital of Wales, Cardiff, UK

QF47  THE EFFECT OF MAGNETICALLY CONTROLLED GROWING ROD ON THE SAGITTAL PROFILE IN EARLY-ONSET SCOLIOSIS PATIENTS
Caglar Yilgor, Kenneth Cheung, Kenny Kwan, Dino Samartzis, John Ferguson, Colin Nnadi, Ilkka Helenius, Muharrem Yazici, Gokhan Demirkiran, Ahmet Alanay, Behrooz Akbarnia
Acibadem University School of Medicine, The University of Hong Kong, Japan; Starship Children’s Hospital, Auckland, Australia; Bone and Joint Surgery, Oxford University Hospitals, Turku, Finland; University Central Hospital, Department of Paediatric Orthopaedic Surgery, Hacettepe University, Ankara, Turkey; Orthopaedic Surgery, University of California, San Diego, US

QF48  ASYMMETRIC APPEARANCE IN THE OSSIFICATION CENTER OF RING APOPHYSIS IN PATIENTS WITH ADOLESCENT IDIOPATHIC SCOLIOSIS (LENKE TYPE 1)
Takahiro Makino, Takashi Kaito, Tsuyoshi Sugiura, Masafumi Kashii, Hideki Yoshikawa
Department of Orthopaedic Surgery, Osaka University Graduate School of Medicine, Osaka, Japan

QF49  SERIAL ELONGATION, DEROTATION AND FLEXION (EDF) CASTING UNDER GENERAL ANESTHESIA AND NEURO-MUSCULAR BLOCKING DRUGS IMPROVE OUTCOME IN PATIENTS WITH JUVENILE SCOLIOSIS: PRELIMINARY RESULTS
Federico Canavese
University Hospital Estaing, Dept. of Pediatric Surgery, Clermont Ferrand, France
14:00–15:20  Trauma, Tumour
Room: B4 M5/6
Chairs: Marco Teli, Milan, Italy; Thomas Zweig, Langenthal, Switzerland

- QF51  AGE-RELATED CHANGES IN THORACIC SPINE KINEMATICS
  Dominika Ignasiak, Andrea Rüeger, Stephen J. Ferguson
  Institute for Biomechanics, ETH Zurich, Switzerland

- QF52  DIFFUSION-WEIGHTED MRI ASSESSMENT OF ADJACENT DISC DEGENERATION AFTER THORACOLUMBAR VERTEBRAL FRACTURES
  David Noriega, Francisco Ardura, Ruben Hernandez Ramajo
  University of Valladolid, Spain

- QF53  CLINICAL OUTCOMES OF INTRAOPERATIVE CONE-BEAM CT NAVIGATION FOR PEDICLE SCREW INSTRUMENTATION IN EMERGENT SPINE SURGERY
  John Street, Daniel Mendelsohn, Jason Strelzow, Juliet Batke, Nicolas Dea
  University of British Columbia, Vancouver, Canada

- QF54  RADIOLOGICAL AND CLINICAL RESULTS AFTER IMPLANTATION OF A HYDRAULIC EXPANSIBLE VERTEBRAL BODY REPLACEMENT FOLLOWING TRAUMATIC VERTEBRAL FRACTURES IN THE THORAKO-LUMBAR SPINE – A THREE-YEARS-FOLLOW-UP
  Michael Kreinest, Dorothee Schmahl, Paul A. Grützner, Stefan Matschke
  BG Trauma Center Ludwigshafen, Department of Trauma and Orthopedic Surgery, Ludwigshafen, Germany

- QF55  SPINAL TRAUMA IN PATIENTS WITH ANKYLOSING SPINAL DISORDERS: A MULTICENTER STUDY, NAGOYA SPINE GROUP
  Mikito Tsushima, Shiro Imagama, Zenya Ito, Kei Ando
  Nagoya University Graduate School of Medicine, Department of Orthopedic Surgery, Nagoya, Japan

- QF56  PREDICTING HIGH SURGICAL TREATMENT COSTS AT PRIMARY SPINAL TUMOR PATIENTS
  Zsolt Szövérfi, Aron Lazary, Izabella Kőszö, Kornél Papik, Péter Pál Varga
  National Center for Spinal Disorders, Budapest, Hungary

- QF57  EVALUATION OF SCORING SYSTEM AND PROGNOSTIC FACTORS IN PATIENTS WITH SPINAL METASTASES FROM LUNG CANCER
  Kimberly-Anne Tan, Jonathan J. H. Tan, Sandar Zaw Aye, Naresh Kumar
  National University Hospital, Department of Orthopaedics, Singapore, Singapore
QF58 A MODIFICATION OF THE TOKUHASHI REvised SCORE IMPROVES PROGNOSTIC ABILITY IN PATIENTS WITH METASTATIC SPINAL CORD COMPRESSION
Søren Schmidt Morgen, Martin Gehrchen, Sebastian Bjørck, Claus Falck Larsen, Svend Aage Engelholm, Benny Dahl
Spine Unit, Department of Orthopedic Surgery, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark; Trauma Center, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark; Department of Radiation and Oncology, Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark

QF59 METASTATIC SPINE TUMOUR SURGERY: MINIMALLY INVASIVE APPROACH VERSUS OPEN APPROACH
Naresh Kumar, Pang Hung Wu, Aye Sandar Zaw, Rishi Malhotra
National University Health System, Singapore, Singapore

QF60 POSTERIOR THORACIC CORPECTOMIES WITH CAGE RECONSTRUCTION FOR METASTATIC SPINAL TUMORS: COMPARING THE MINI-OPEN APPROACH TO THE OPEN APPROACH
Dean Chou, Darryl Lau
Department of Neurological Surgery, University of California, San Francisco, US

14:00–15:20 New Techniques, Imaging, Patient Safety, Infection, Complications
Room: B4 M9/10
Chairs: Dominique Rothenfluh, Oxford, UK; Christoph J. Siepe, Munich, Germany

QF61 DEGENERATIVE CHANGES IN T1RHO MRI OF THE LUMBAR SPINE IN ASYMPOMATIC SUBJECTS
Tobias Schulte, Volker Vieth, Georg Gosheger, Christoph Stehling, Walter Heindel, Joachim Gerß, Tobias Lange, Raphael Gübitz
Department of Orthopedics and Tumor Orthopedics, University Hospital Münster, Germany; Department of Clinical Radiology, University Hospital Münster, Germany; Institute of Biostatistics and Clinical Research, University of Münster, Germany; Fraunhofer MEVIS, Institute for Medical Image Computing, Bremen, Germany

QF62 SANDWICH VERTEBRAL FRACTURE IN THE STUDY OF ADJACENT-LEVEL FRACTURE AFTER CEMENTED VERTEBRAL AUGMENTATION
Félix Tomé-Bermejo, Angel R. Piñera, Javier Melchor Duart Clemente, Silvia Pérez-Esteban, Luis Alvarez Galovich
Spine Department, Fundación Jiménez Díaz University Hospital, Madrid, Spain

QF63 NEW SURGICAL APPROACH AND DECOMPRESSION PRESERVING MUSCLE-LIGAMENTOUS COMPLEX FOR LUMBAR CANAL STENOSIS
Futoshi Suetsuna
Hachinohe Municipal Hospital, Hachinohe, Japan
QF64 OCCULT INFECTIONS IN PATIENTS UNDERGOING REVISION SURGERY
Celeste Abjornson, Tucker Callanan, Victor Yoon, Frank Cammisa
Hospital for Special Surgery, New York, US

QF65 AN ALGORITHMIC APPROACH FOR MANAGING ORTHOPAEDIC SURGICAL WOUNDS OF THE CICATRICAL SCOLIOSIS: NEW TECHNOLOGIES
En Xie, Dingjun Hao
Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

QF66 IS PREOPERATIVE FIBRINOGEN PLASMA CONCENTRATION A GOOD BLEEDING PREDICTOR IN ADULT SPINAL DEFORMITY SURGERY?
Lidia Mora, Alba Vila-Casademunt, Ferran Pellisé, M. José Colomina, Montse Domingo-Sòbat, Francisco Javier S. Pérez-Grueso, Ahmet Alanay, Emre Acaroglu, Joan Bagó, ESSG European Spine Study Group
Hospital Vall Hebrón, Barcelona, Spain; Vall Hebron Institut de Recerca, Barcelona, Spain; Hospital De La Paz, Madrid, Spain; Acibadem University School of Medicine, Istanbul, Turkey; Ankara Spine Center, Ankara, Turkey

QF67 THE EFFECT OF LUMBAR DISC DEGENERATION ON POSITIONAL CHANGES IN THE LUMBAR LORDOSIS: A CROSS-SECTIONAL COMPARISON WITH HEALTHY CONTROLS
Bjarke Brandt Hansen, Tom Bendix, Jacob Juel Grindsted, Henning Bliddal, Robin Christensen, Philip Hansen, Robert C. G. Riis, Mikael Boesen
The Parker Institute, Department of Rheumatology, Copenhagen University Hospital, Frederiksberg, Denmark

QF68 THE ACCURACY OF THORACIC PEDICLE SCREW PLACEMENT IN SPINAL DEFORMITIES WITH THE USE OF SPECIFIC RAPID PROTOTYPING 3D TEMPLATES
Janez Mohar, Robert J. Cirman
Department of Spine Surgery and Paediatric Orthopaedics, Valdoltra Orthopaedic Hospital, Ankaran, Slovenia

QF69 PROXIMAL JUNCTIONAL FAILURE WITH NEUROLOGICAL DEFICIT FROM A RETROSPECTIVE DATABASE
Charles Sansur, Andrew Frost, Niall Craig, John Schmidt, Jennifer McCool, Megan Dumas
University of Maryland Medical Center, NHS Grampian, Leesburg, US

QF70 INCIDENCE OF CANCER AND INFERTILITY, IN PATIENTS TREATED FOR ADOLESCENT IDIOPATHIC SCOLIOSIS 25 YEARS PRIOR
Ane Simony, Steen Bach Christensen, Karl Erik Jensen, Leah Y. Carreon, Mikkel O. Andersen
Middelfart Hospital, Middelfart, Denmark

QF71 INCIDENTAL DUROTOMY: HOW TO INCREASE THE RATE OF SUCCESSFUL SINGLE STAGE CLOSURE
Luca Papavero, Nils Engler
Clinic for Spine Surgery, Schoen Klinik Hamburg Eilbek, Germany
QF72 RELATIONSHIP BETWEEN PSOAS MUSCLE POSITION AND SPINO-PELVIC ALIGNMENT: AN ANATOMICAL ANALYSIS USING MRI FOR LATERAL INTERBODY FUSION SURGERY
Akira Kondo, Yuichiro Abe, Kentaro Yamada, Takanobu Otsuka, Shigenobu Sato
Department of Orthopedics Surgery, Einiwa Hospital, Japan; Department of Orthopedics Surgery, Nagoya City University, Japan

QF73 CAN A FORMULA REALLY PREDICT THE THEORETICAL LUMBAR LORDOSIS RELIABILITY THROUGH A RADIOGRAPHIC STUDY IN 296 HEALTHY VOLUNTEERS
Féthi Laouissat, Pierre Roussouly
CMCR Massues-Croix Rouge Française, Lyon, France

QF74 COMPUTER-ASSISTED SPINOPELVIC TUMOR RESECTION USING ULTRASONIC OSTEOTOME INTEGRATED STEREOTACTIC NAVIGATION
Justin Bird, Patrick Lin, Robert Satcher, Bryan Moon, Valerae Lewis
MD Anderson Cancer Center, Houston, US

QF75 INCIDENCE AND RISK FACTORS FOR VENOUS THROMBOEMBOLISM AFTER SPINE SURGERY: A PROSPECTIVE COHORT STUDY
Katsuhiro Yoshioka, Hideki Murakami, Satoru Demura, Satoshi Kato, Moriyouki Fujii, Takashi Igarashi, Noritaka Yonezawa, Hiroyuki Tsuchiya
Department of Orthopaedic Surgery, Kanazawa University, Kanazawa, Japan

15:20–15:50
COFFEE BREAK IN THE EXHIBITION AREA

15:50–17:30
New Techniques, Imaging, Patient Safety, Infection, Complications
Room: Plenary Hall
Chairs: Cédric Barrey, Lyon, France; Yann-Philippe Charles, Strasbourg, France

83 MULTICENTER, RANDOMIZED PLACEBO-CONTROLLED CLINICAL TRIAL TO EVALUATE THE EFFECT OF PERIOPERATIVE USE OF TRANEXAMIC ACID ON TRANSFUSION REQUIREMENTS AND SURGICAL BLEEDING IN MAJOR SPINE SURGERY
Juan Bago, M. Jose Colominas, Frederic Font, Javier Pizones, Salvador Fuster, Ferran Pellise
Hospital Vall d’Hebron, Barcelona, Spain

84 PATIENT REPORTED VALUE 1 YEAR AFTER SURGERY FOR LUMBAR DISC HERNIATION: PREDICTORS OF OUTCOME USING THE SWEDISH NATIONAL SPINE REGISTER; SWESPINE
Peter Fritzell, Olle Hägg, Björn Strömqvist, Björn Knutsson
Neuro-Orthopedic Clinic, Jönköping, Sweden; Spine Center Göteborg, Sweden; Orthopedic Clinic, Sundsvalls Sjukhus, Sweden; Lund University Hospital, Sweden

85 PEDICLE SCREW MALPOSITION IN REVISION SPINE SURGERY: EFFICACY OF INTRA-OPERATIVE CT BASED NAVIGATION
John Street, Harvey Wu, Andrew Pennington, Juliet Batke, Kaiyun Yang, Charles Fisher, Marcel Dvorak
University of British Columbia, Vancouver, Canada
86 DEVELOPMENT, CHARACTERIZATION, AND IN VITRO ASSESSMENT OF ADDITIVE MANUFACTURED BIOMIMETIC IMPLANT SURFACES
Regina MacBarb, Derek Lindsey, Chelsea Bahney, Shane Woods, Mark Wolfe, Scott Yerby
SI-BONE, Inc., San José, US

87 GLOBAL TILT: A SINGLE PARAMETER INCORPORATING THE SPINAL AND PELVIC PARAMETERS CORRELATES WITH HEALTH-RELATED QUALITY OF LIFE PARAMETERS
Caglar Yilgor, Meric Enercan, Azmi Hamzaoglu, Ferran Pellise, Paco Sanchez Perez-Grueso, Emre Acaroglu, Ibrahim Obeid, Frank Kleinstuck, Ahmet Alanay, ESSG European Spine Study Group
Acibadem University School of Medicine; Istanbul Spine Center, Istanbul, Turkey; Spine Unit, Hospital Valle Hebron, Hospital De La Paz, Madrid, Spain; Orthopedic Spine, Ankara Spine Center, Turkey; CHU Bordeaux Pellegrin Hospital, France; Department of Orthopaedics, Schulthess Klinik, Switzerland; Fundació Institut de Recerca Vall Hebron, Barcelona, Spain

88 REDUCING ROD BREAKAGE AND NONUNION IN PEDICLE SUBTRACTION OSTEOTOMY: THE IMPORTANCE OF ROD NUMBER AND CONFIGURATION IN 264 PATIENTS WITH 2-YEAR FOLLOW-UP
Virginie Lafage, Munish Gupta, Jensen Henry, Frank Schwab, Christopher Ames, Eric Klineberg, Justin Smith, Christopher Shaffrey, Douglas Burton, International Spine Study Group
International Spine Study Group, New York, US

89 IS THE C7 SAGITTAL VERTICAL AXIS (SVA) THE BEST RADIOGRAPHIC MEASURE TO PREDICT CLINICAL OUTCOMES IN ADULT SPINAL DEFORMITY?
Yong-Chan Kim, Lawrence G. Lenke, Young-Woo Kim, Sirichai Wilartratsami, Cheol-Jung Yang
Department of Orthopaedic Surgery, Hallym University Sacred Heart Hospital, Hallym University School of Medicine, Anyang-si, Korea

90 PREDICTING MEDICAL COMPLICATIONS TO ENHANCE SAFETY OF SPINE SURGERY
Maximilian Kasparek, Josef Grohs
Department of Orthopaedic Surgery, University of Vienna, Vienna, Austria
91 INCIDENCE OF COMPLICATIONS AND ADVERSE EVENTS AFTER VIDEO ASSISTED THORACIC SURGERIES (VATS) AT THE SPINAL COLUMN: RESULTS OF A SYSTEMATIC RETROSPECTIVE ANALYSIS OF 282 CASES
Daniel P. J. Sauer, Franziska Heider, Raphael D’Agostini, Imme Haubitz, Andreas Korge, Christoph Mehren, Michael Mayer, Christoph J. Siepe
Schoen Clinic Munich Harlaching, Munich, Germany

92 DIFFUSION TENSOR IMAGING IN CERVICAL SYRINGOMYELIA SECONDARY TO CHIARI I MALFORMATION: PRELIMINARY RESULTS
Huang Yan, Zexhong Zhu, Zhen Liu, Yong Qiu, Bangping Qian, Xu Sun
The Spine Surgery, the Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

93 SURGICAL APPROACH CAN INFLUENCE POSTDECOMPRESSION RELEASE OF TENSION ON THE MYELOPATHIC SPINAL CORD LONG TRACKS: A DYNAMIC CERVICAL MRI 3-D RECONSTRUCTION ANALYSIS
Marin Stancic, Ivana Stancic, Zvonimir Ivan Lubina
Clinical Hospital Center Zagreb, Zagreb, Croatia; TIA, Copenhagen, Denmark; Clinical Hospital Merkur, Zagreb, Croatia

94 PATTERNS OF LUMBAR PAIN: A COST ANALYSIS APPROACH TO LUMBAR PAIN IN PRIMARY CARE IN OCCUPATIONAL MEDICINE. A COMPARATIVE STUDY OF TWO RETROSPECTIVE COHORTS OF 2375 PATIENTS DURING 2014 (I)
Jaime Diaz de Atauri, Oscar Zabalza Mantilla, Mikel Ayala Garcia
Clinica Ercilla Mutualia, Bilbao, Spain; Mutualia Alava, Vitoria-Gasteiz, Spain

17:30 ADJOURN – END
| P1 | MINIMAL INVASIVE APPROACH FOR VENTRALLY LOCATED INTRADURAL SMALL LESIONS IN THE CRANIOVERTEBRAL JUNCTION  
Sven O. Eicker, Klaus Christian Mende, Lasse Dührsen, Nils Ole Schmidt  
Department of Neurosurgery, University Hospital Hamburg-Eppendorf, Germany |
|---|---|
| P2 | THE INSERTION TECHNIQUE OF GUIDE WIRE FOR THE CERVICAL CANNULATED PEDICLE SCREWS  
Hisanori Ikuma, Ryoji Joko  
Department of Orthopaedics Surgery, Kagawa Rosai Hospital, Marugame, Japan |
| P3 | INFLUENCE OF POSTERIOR CERVICAL CAGE ON CERVICAL FORAMINAL AREA  
Piotr Janusz, Kris Siemionow  
Department of Orthopaedics, University of Illinois at Chicago, Chicago, US |
| P4 | COMPARATIVE STUDY ON THE ZERO-PROFILE CAGE WITH SCREWS SYSTEM AND STAND-ALONE RECTANGULAR PEEK CAGE SYSTEM-AUGMENTED FUSIONS AFTER SINGLE LEVEL ANTERIOR CERVICAL DISCECTOMY  
Jong-Tae Kim, Doo-Yong Choi  
Incheon Saint Mary’s Hospital, The Catholic University of Korea, Incheon, Korea |
| P5 | THE EFFECT OF HUBBING ON THE PULL-OUT STRENGTH OF LATERAL MASS SCREWS IN THE CERVICAL SPINE: A BIOMECHANICAL EXPERIMENT  
Ki-Hyoung Koo, S. Tim Yoon, Jung-Hoon Kim, William C Hutton, Keun-Tae Cho  
Department of Orthopaedic Surgery, Dongguk University Ilsan Hospital, Gyeonggi, Korea |
| P6 | POLYETHERETHERKETONE CAGE WITH DEMINERALIZED BONE MATRIX CAN REPLACE THE ILIAC CREST AUTOGRRAFTS FOR ANTERIOR CERVICAL DISCECTOMY AND FUSION IN SUBAXIAL CERVICAL SPINE INJURIES  
Jung-Kil Lee, Moon-Soo Han  
Department of Neurosurgery, Chonnam National University Medical School & Research Institute of Medical Sciences, Gwangju, Korea |
| P7 | KINEMATIC ANALYSIS OF THE CERVICAL SPINE AFTER ANTERIOR CERVICAL DISCECTOMY AND SELF-LOCKING CAGE FUSION AT AN ADJACENT LEVEL  
Baoge Liu, Dongmei Li, Yao Zhang  
Beijing TianTan Hospital, Capital Medical University, Beijing, China |
| P8 | ANTERIOR SCREW FIXATION IN TYPE II ODONTOID FRACTURES: COMPARISON BETWEEN THE YOUNG AND THE ELDERLY  
Woo-Kie Min  
Kyungpook National University Hospital, Deagu, South Korea |
P9  RADIOPHGRAMIC DIMENSIONAL ANALYSIS OF OPEN DOOR LAMINOPLASTY WITH PLATE IN CERVICAL SPONDYLOTIC MYELOPATHY
Woo-Kie Min
Kyungpook National University Hospital, Deagu, South Korea

P10  EFFECT OF PREOPERATIVE SAGITTAL BALANCE ON CERVICAL LAMINOPLASTY OUTCOMES IN ELDERLY PATIENTS AGED ≥65 YEARS
Yasushi Oshima
Department of Orthopaedic Surgery, The University of Tokyo, Japan

P11  DOES PREOPERATIVE NECK PAIN DECREASE AFTER CERVICAL LAMINOPLASTY?
Yasushi Oshima
Department of Orthopaedic Surgery, The University of Tokyo, Japan

P12  OUTCOMES AND REVISION SURGERY OF FRENCH DOOR LAMINOPLASTY
Itaru Oda, Eihiro Murota, Hirohito Takeuchi, Masaru Suzuki, Masanori Fujiya
Hokkaido Orthopaedic Memorial Hospital, Sapporo, Japan

P13  ANATOMICAL EFFECT OF ROTATION ON ATLANTOAXIAL JOINT: A PILOT MRI STUDY
Narendra Rath, Kathleen Lyons, Xin Yang, Len Nokes, Michael J. H. McCarthy
University Hospitals of Wales, Bridgend, UK

P14  CERVICAL SPINE FRACTURE IN PATIENTS WITH DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS. A REPORT OF 7 CASES
Hiroaki Sameda, Jun Shimbo, Sumio Ikenoue, Kan Takase, Yukio Someya, Hiroto Kanamoto, Masaya Mimura
Department of Orthopaedic Surgery, Funabashi Municipal Medical Center, Funabashi City, Japan

P15  POOR PROGNOSIS ASSOCIATED WITH DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS IN CERVICAL SPINAL CORD INJURY: ANALYSIS OF PROGNOSTIC FACTOR IN PATIENTS WITH CERVICAL SPINAL CORD INJURY
Kimihiko Sawakami, Takui Ito, Ikuko Takahashi, Seiichi Ishikawa
Department of Orthopaedic Surgery, Niigata City General Hospital, Japan

P16  SIGNIFICANT REDUCTION IN THE INCIDENCE OF C5 PALSY AFTER CERVICAL LAMINOPLASTY USING CHILLED IRRIGATION WATER
Shota Takenaka, Noboru Hosono, Yoshihiro Mukai, Kosuke Tateishi, Takeshi Fuji
Japan Community Healthcare Organization Osaka Hospital, Osaka, Japan

P17  FACETECTOMY CAN WIDEN FORAMINAL AXIAL DIAMETER MORE THAN FORAMINOTOMY TO PREVENT IATROGENIC FORAMINAL STENOSIS AFTER CERVICAL PEDICLE SCREW FIXATION
Akiyoshi Yamazaki, Tomohiro Izumi, Tatsuki Mizouchi, Hideki Tashi
Niigata Central Hospital, Niigata, Japan
**P18** STAND-ALONE ANCHORED SPACER VERSUS ANTERIOR PLATE FOR MULTILEVEL ANTERIOR CERVICAL DISKECTOMY AND FUSION
Lili Yang, Wen Yuan
Department of Spine Surgery, Shanghai Changzheng Hospital, Shanghai, China

**P19** THE INFLUENCE OF OCCIPITAL ORIENTATION ON CERVICAL SAGITTAL ALIGNMENT: A PROSPECTIVE RADIOGRAPHIC STUDY ON 354 NORMAL SUBJECTS
Weiguo Zhu, Zezhang Zhu, Zhen Liu, Bangqing Qian, Yong Qiu
From the Department of Spine Surgery, Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

**Basic Science, Biology**

**P20** DIRECTLY REPROGRAMMED AUTOLOGOUS NEURAL STEM CELLS AND REGENERATIVE MATRIX FOR COMPLETE SPINAL CORD INJURY
Oleg Durov, Jan-Eric Ahlfors, Alexander Averyanov, Mihail Tikhonovsky, Mihail Konoplyannikov, Nikolay Svetkinov
Federal Research Clinical Center under FMBA of Russia, Moscow, Russia; New World Laboratories Inc., Laval, Canada

**P21** G-PROTEIN COUPLED RECEPTOR 128 IS REGULATED BY ESTRADIOL
Florina Moldovan, Amani Hassan, Eduardo Bagu, Julie Couillard, Shunmoogum A Patten
CHU Sainte-Justine, Montreal, Canada; Faculty of Dentistry-Stomatology, Montreal, Canada

**P22** EFFICACY COMPARISON OF TWO COMMERCIALLY AVAILABLE DEMINERALIZED BONE MATRICES AGAINST AUTOLOGOUS BONE IN A RAT POSTEROLATERAL SPINE FUSION MODEL
Antonio Brecevich, Paul Kiely, Byung Jo Victor Yoon, Frank Cammisa, Celeste Abjornson
Hospital for Special Surgery, New York, US

**Basic Science, Biomechanics**

**P23** BIOMECHANICAL PATIENT-SPECIFIC 3D SPINE MODELING FROM BIPLANAR RADIOGRAPHIC IMAGES
Tito Bassani, Sara Zacchetti, Claudia Ottardi, Francesco Costa, Marco Brayda-Bruno, Hans-Joachim Wilke, Fabio Galbusera
IRCCS Galeazzi, IRCCS Humanitas, Politecnico di Milano, Italy; Ulm University, Ulm, Germany

**P24** EVALUATING SAGITTAL SPINAL POSTURE DURING FUNCTIONAL TASKS – CAN KINEMATICS DIFFERENTIATE BETWEEN NON-SPECIFIC CHRONIC LOW BACK PAIN (NSCLBP) SUBGROUPS AND HEALTHY CONTROLS?
Rebecca Hemming, Liba Sheeran, Robert van Deursen, Valerie Sparkes
School of Healthcare Sciences, Cardiff University, Cardiff, UK
P25  BIOMECHANICAL COMPARISON OF TRADITIONAL ILIAC SCREW (TIS) FIXATION VERSUS DISTAL ILIAC SCREW (DIS) FIXATION: A CADAVERIC STUDY
Meric Enercan, Mutlu Cobanoglu, Sinan Kahraman, Bahadir Gokcen, Sinan Yilar, Tunay Sanli, Erdem Erturer, Cagatay Ozturk, Ahmet Alanay, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

P26  FACET JOINT CAPSULAR LAXITY IN DEGENERATIVE LUMBAR SPONDYLOLISTHESIS ASSOCIATED WITH THE INCREASED EXPRESSION OF FRACTALKINE (CX3CL1)/CX3CR1 CHEMOKINE
In-Soo Oh, Kee-Yong Ha
Incheon St. Mary’s Hospital, The Catholic University of Korea, Incheon, Korea

P27  TO WHAT EXTENT LUMBOPELVIC POSTURE INFLUENCES THE MYOELECTRIC SILENCE OF THE ERECTOR SPINAE DURING TRUNK FLEXION
Carlos Barrios, Rut Expositor-Rodríguez, M.Ángeles Sarti
Universidad Católica de Valencia, Spain; Universidad de Valencia, Spain

Thoraco-Lumbar Spine: Degenerative, Deformity

P28  DEGENERATIVE LUMBAR SPINAL STENOSIS AND PARASPINAL MUSCLES CONDITION
Janan Abbas, Kamal Hamoud, Natan Peled, Israel Hershkovitz
Department of Anatomy and Anthropology, Sackler Faculty of Medicine Tel-Aviv University, Israel; Department of Physical Therapy, Zefat Academic College, Zefat, Israel; Spine Unit, Baruch Padeh Poriya Medical Center, Tiberias, Israel; Department of Radiology, Carmel Medical Center, Haifa, Israel

P29  HOW RELIABLE IS THE SURGEON’S ABILITY TO DIFFERENTIATE BETWEEN IDIOPATHIC AND DEGENERATIVE DEFORMITY IN ADULTS; WHAT PARAMETERS HELP THEM DECIDE?
Emre Acaroglu, Umit Ozgur Guler, Selim Ayhan, Sule Yakici, Montse Domingo-Sabat, Ferran Pellise, Francisco Javier Sanchez Perez-Grueso, Ahmet Alanay, Ibrahim Obeid, Frank Kleinstück, European Spine Study Group (ESSG)
Ankara Spine Center, Ankara, Turkey; Raquis, Fundació Institut de Recerca Vall d’Hebron, Barcelona, Spain; Spine Unit, Hospital Vall d’Hebron, Barcelona, Spain; Spine Unit, Hospital Universitario La Paz, Madrid, Spain; Acibadem University School of Medicine, Comprehensive Spine Center, Acibadem Maslak Hospital, Istanbul, Turkey; Spine Unit, Bordeaux University Hospital, Bordeaux, France; Spine Unit, Schulthess Klinik, Zurich, Switzerland; Fundació Institut de Recerca Vall d’Hebron, Spain

P30  EVALUATION OF CELL BINDING PEPTIDE (P15) WITH SILK FIBRE ENHANCED HYDROXYAPATITE BONE SUBSTITUTE FOR POSTEROLATERAL SPINAL FUSION IN SHEEP
Martin Axelsen, Stig Mindedahl Jespersen, Søren Overgaard, Ming Ding
Orthopaedic Research Laboratory, Department of Orthopedic Surgery and Traumatology, Odense University Hospital, Institute of Clinical Research, University of Southern Denmark, Odense, Denmark
P31  MULTIPLE REGRESSION ANALYSIS OF FACTORS AFFECTING THE MENTAL COMPONENT SCORE CONSTITUENTS OF SF-36 IN ADULT SPINAL DEFORMITY
Ankara Spine Center, Ankara, Turkey; Department of Biostatistics, Yıldırım Beyazıt University School of Medicine, Ankara, Turkey; Department of Psychology, Middle East Technical University Northern Cyprus Campus, Turkish Republic of Northern Cyprus; Raquis, Fundació Institut de Recerca Vall d’Hebron, Barcelona, Spain; Spine Unit, Hospital Vall d’Hebron, Barcelona, Spain; Acibadem University School of Medicine, Comprehensive Spine Center, Acibadem Maslak Hospital, Istanbul, Turkey; Spine Unit, Hospital Universitario La Paz, Madrid, Spain; Spine Unit, Bordeaux University Hospital, Bordeaux, France; Spine Unit, Schulthess Klinik, Zurich, Switzerland; Fundació Institut de Recerca Vall d’Hebron, Barcelona, Spain

P32  COGNITIVE IMPAIRMENT FOLLOWING ADULT SPINAL DEFORMITY SURGERY
Selim Ayhan, Vugar Nabiyev, Selcen Yuksel, Montse Domingo-Sabat, Ferran Pellise, Ahmet Alanay, Francisco Javier Sanchez Perez-Grueso, Frank Kleinstück, Ibrahim Obeid, Emre Acaroglu, European Spine Study Group (ESSG)
Ankara Spine Center, Ankara, Turkey; Department of Biostatistics, Yıldırım Beyazıt University School of Medicine, Ankara, Turkey; Raquis, Fundació Institut de Recerca Vall d’Hebron, Barcelona, Spain; Spine Unit, Hospital Vall d’Hebron, Barcelona, Spain; Acibadem University School of Medicine, Comprehensive Spine Center, Acibadem Maslak Hospital, Istanbul, Turkey; Spine Unit, Hospital Universitario La Paz, Madrid, Spain; 8 Spine Unit, Schulthess Klinik, Zurich, Switzerland; Spine Unit, Bordeaux University Hospital, Bordeaux, France; Fundació Institut de Recerca Vall d’Hebron, Barcelona, Spain

P33  CORONAL IMBALANCE IN DEGENERATIVE LUMBAR SCOLIOSIS: PREVALENCE AND INFLUENCE ON SURGICAL DECISION-MAKING FOR SPINE OSTEOTOMY
Hongda Bao, Feng Zhu, Yong Qiu, Zezhang Zhu
The Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

P34  CHANGES IN THE SAGITTAL ALIGNMENT AND RANGE OF MOTION OF THE LUMBAR SPINE AFTER OBLIQUE IMPLANTED TOTAL LUMBAR DISC REPLACEMENT: A 2-YEAR PROSPECTIVE STUDY OF 52 CASES
Eduardo Hevia, Juan Solaz, Alberto Caballero, Jesús Burgos, Carlos Barrios
Spine Surgery Unit, Hospital La Fraternidad-Muprespa, Madrid, Spain; Institute for Research on Musculoskeletal Disorders, Valencia Catholic University, Valencia, Spain

P35  SAGITTAL PLANE CORRECTION IS CORRELATED WITH QUALITY OF LIFE AT EARLY FOLLOW-UP IN ADULT DEFORMITY PATIENTS
Evalina Burger, Andriy Noshchenko, Cameron Barton, Sean Molloy, Michael Chang, Vincent Fiere
University of Colorado, Anschutz Medical Campus, US; Centre Orthopedique Santy, Lyon, France; The Royal National Orthopaedic Hospital, Stanmore, UK; University of Arizona, Sonoran Spine Center, Phoenix, US
P36 TRANSIDISCAL SCREW VERSUS PEDICL SCREW FIXATION FOR HIGH-GRAD L5-S1 ISTHMIC SPONDYLOLISTHESIS IN PATIENTS YOUNGER THAN 60 YEARS. A CASE-CONTROL STUDY
Isabel Collados, Alejandro Lizaur-Utrilla, Paloma Bas, Teresa Bas
Hospital Universitario Y Politcnico La Fe, Valencia, Spain

P37 CAN SPINO-PELVIC PARAMETERS PREDICT HARDWARE FAILURE IN SCHEUERMANN’S KYPHOSIS PATIENTS?
Eyal Behrbalk, Ofr Uri, Hossein Mehdian, Bronek Boszczyk, Masood Shafafy, Luigi Nasto, Radek Kaiser, Michael Grevitt
Queen’s Medical Centre NHS Trust, Nottingham, UK

P38 THE TIMING OF SURGERY AND SYMPTOM RESOLUTION IN PATIENTS UNDERGOING TRANSFORAMINAL LUMBAR INTERBODY FUSION FOR LUMBAR DEGENERATIVE DISC DISEASE AND RADICULOPATHY
Sigita Burneikiene, Alan Villavicencio, Alexander Mason, Sharad Rajpal
Boulder Neurosurgical Associates, Boulder, US

P39 DEVELOPMENT OF A CORE OUTCOME SET TO UPDATE THE EXISTING SET OF OUTCOME DOMAINS FOR LOW BACK PAIN
Alessandro Chiarotto, Caroline Terwee, Maarten Boers, Raymond Ostelo
Department of Health Sciences, Faculty of Earth and Life Sciences, EMGO+ Institute for Health and Care Research, VU University, Amsterdam, The Netherlands

P40 A PROPOSED SET OF METRICS FOR STANDARDIZED OUTCOME REPORTING IN THE MANAGEMENT OF LOW BACK PAIN
Rutledge Clement, Adina Welander, Caleb Stowell, ICHOM Working Group in Low Back Pain, Peter Fritzell
The International Consortium for Health Outcomes Measurement, Capel Hill, US

P41 SIGNIFICANCE OF AQUATIC FUNCTIONAL TRAINING IN THE THERAPY OF CHRONIC LOW BACK PAIN
Stefan Dalichau, Torsten Möller
BG Unfallambulanz und Rehazentrum Bremen, Bremen, Germany

P42 IS THE ROUTINE USE OF MAGNETIC RESONANCE IMAGING INDICATED IN PATIENTS WITH SCOLIOSIS?
Varun Dewan, Stephen Forster, Jacob Matthews, Matthew Newton Ede, Jwalant Mehta, Jonathan Spilsbury, David Marks, Adrian Gardner
Royal Orthopaedic Hospital, Birmingham, UK

P43 VALIDITY AND RELIABILITY OF AN OBJECTIVE MEASUREMENT OF FUNCTIONAL IMPAIRMENT IN LUMBAR DEGENERATIVE SPINE DISEASE: THE TIMED-UP-AND-GO-TEST (TUG-TEST)
Oliver P. Gautschi, Nicolas R. Smoll, Marco V. Corniola, Holger Joswig, Gerhard Hildebrandt, Karl Schaller, Martin N. Stienen
Department of Neurosurgery and Faculty of Medicine, University Hospital Geneva, Geneva, Switzerland
MICROSURGICAL ANULAR RESTORATION WITH A Z-SUTURE FOLLOWING LUMBAR MICRODISCECTOMY: A RETROSPECTIVE COMPARATIVE STUDY ON 763 PATIENTS WITH A MEAN FOLLOW-UP OF 12.5 YEARS
Oliver P. Gautschi, Martin N. Stienen, Eliane Rohner, Matthias Rohner
Department of Neurosurgery and Faculty of Medicine, University Hospital Geneva, Geneva, Switzerland

DOES OBESITY AFFECT OUTCOMES AFTER DECOMPRESSIVE SURGERY FOR LUMBAR SPINAL STENOSIS? A MULTICENTER OBSERVATIONAL REGISTRY-BASED STUDY
Charalampis Giannadakis, Ulf Nerland, Ole Solheim, Clemens Weber, Sasha Gulati
Department of Neurosurgery, St. Olavs University Hospital, Trondheim, Norway; National Advisory Unit on Spinal Surgery Center for Spinal Disorders, St. Olavs University Hospital, Trondheim, Norway

IMPROVED OUTCOME OVER TIME AFTER SURGERY FOR DDD. A REPORT FROM THE NATIONAL SPINE REGISTER IN SWEDEN; SWESPINE
Olle Hägg, Peter Fritzell, Björn Strömqvist, Björn Knutsson
Spine Center Göteborg, Sweden; Neuroorthopedic Department, Ryhovs Hospital, Jönköping, Sweden; Department of Orthopedics, Lund University Hospital, Lund, Sweden; Department of Orthopedics, Sundsvall Hospital, Sundsvall, Sweden

THE RADIOLOGICAL AND CLINICAL TREATMENT EFFECT OF A PERCUTANEOUS INTERSPINOUS DEVICE IN SPINAL STENOSIS – A COHORT STUDY WITH A ONE-YEAR FOLLOW-UP
Christian Hagelberg, Wisam Witwit, Christer Johansson, Hanna Hebelka Bolminger, Helena Brisby, Adad Baranto
Institution of Clinical Sciences at Sahlgrenska Academy University of Gothenburg and Sahlgrenska University Hospital, Gothenburg, Sweden

CLINICAL RESULTS AND COMPLICATIONS OF SURGICAL TREATMENT FOR THORACIC MYELOPATHY CAUSED BY OSSIFICATION OF THE POSTERIOR LONGITUDINAL LIGAMENT: A MULTICENTER RETROSPECTIVE STUDY
Mitsumasa Hayashida, Katsumi Harimaya, Ken Maeda, Hideki Ohta, Kenzo Shirasawa, Kuniyoshi Tsuchiya, Kazumasa Terada, Kozo Kaji, Tsuyoshi Arimoto, Yukihide Iwamoto
Department of Orthopaedic Surgery, Graduate School of Medical Sciences, Kyushu University, Japan

SEGMENTAL STABILITY FOLLOWING MINIMALLY INVASIVE DECOMPRESSIVE SURGERY WITH TUBULAR RETRACTOR FOR LUMBAR SPINAL STENOSIS
Naoki Higashiyma, Taku Sugawara
Department of Spinal surgery, Research Institute for Brain and Blood Vessels-Akita, Japan

OUTCOMES OF MINIMALLY INVASIVE LUMBAR FUSION (MILIF) IN PATIENTS WITH STENOSIS: SUBGROUP ANALYSIS
Ulrich Hubbe, Roberto Assietti, Khai Lam, Hamid Khoshab, Kai Scheufler, Salvador Fuster, Joerg Franke
Universitätsklinikum Freiburg, Freiburg, Germany
**P51** THE EFFECT OF FUSION LEVEL ON THE RADIOLOGIC AND FUNCTIONAL OUTCOMES IN THE SURGICAL TREATMENT OF ADULT DEFORMITY IN PATIENTS OLDER THAN 65 YEARS-OLD
Erden Erturer, Sinan Yilar, Meric Enercan, Sinan Kahraman, Bahadir Mutlu, Mutlu Cobanoglu, Tunay Sanli, Mercan Sarier, Cagatay Ozturk, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

**P52** DISTAL Iliac Screw (DIS) FIXATION TECHNIQUE: AN ALTERNATIVE ILIOPELVIC FIXATION TECHNIQUE IN ADULT DEFORMITY SURGERY
Meric Enercan, Sinan Kahraman, Bahadir Gokcen, Tunay Sanli, Mutlu Cobanoglu, Sinan Yilar, Tunay Sanli, Erden Erturer, Cagatay Ozturk, Ahmet Alanay, Mercan Sarier, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

**P53** CLINICAL RESULTS OF DYNAMIC STABILIZATION ADJACENT TO FUSION LEVEL: A NEW LUMBAR HYBRID INSTRUMENTATION
Meric Enercan, Bahadir Gokcen, Sinan Kahraman, Mutlu Cobanoglu, Sinan Yilar, Tunay Sanli, Erden Erturer, Cagatay Ozturk, Mercan Sarier, Azmi Hamzaoglu
Istanbul Spine Center, Istanbul, Turkey

**P54** THE OUTCOMES OF INSTRUMENTED POSTEROLATERAL LUMBAR FUSION IN PATIENTS WITH RHEUMATOID ARTHRITIS
Ji-Hoon Shim, Seung-Pyo Suh, Chul-Woong Kim, Chang-Nam Kang
Hanyang University, Seoul, South Korea

**P55** EXPANDABLE TECHNOLOGY IN MINIMALLY INVASIVE TLIF: A MULTICENTER CLINICAL AND RADIOGRAPHIC ANALYSIS OF 202 PATIENTS WITH TWO YEAR FOLLOW UP
Choll Kim, James Lindley, Todd Doerr, Phillip St. Louis, Ingrid Luna, Piotr A. Kowalski, Gita Joshua
Musculoskeletal Education and Research Center (MERC), a division of Globus Medical Inc., Audubon, US

**P56** IDENTIFYING THORACIC COMPENSATION AND PREDICTING RECIPROCAL THORACIC KYPHOSIS AND PIK
Renaud Lafage, Themistocles Protopsaltis, Bassel Diebo, Justin Smith, Eric Klineberg, Douglas Burton, Christopher Ames, Shay Bess, Frank Schwab, International Spine Study Group
International Spine Study Group, New York, US

**P57** AFTER NINE YEARS OF THREE-COLUMN OSTEOTOMIES, ARE WE DOING BETTER? PERFORMANCE CURVE ANALYSIS OF 573 SURGERIES WITH 2-YEAR FOLLOW UP
NYU Hospital for Joint Diseases, New York, US

**P58** UNLOCKING TPA’S CLINICAL AND SAGITTAL SIGNIFICANCE BY ANALYZING ITS RELATION TO PELVIC TILT
Virginie Lafage, Renaud Lafage, Jonathan Oren, Shaleen Vira, Bradley Harris, Matthew Spiegel, Bassel Diebo, Themistocles Protopsaltis, Thomas Errico, Frank Schwab
NYU Hospital for Joint Diseases, New York, US
CHAIN OF RELAXATION: HOW SAGITTAL CORRECTION AFFECTS SPINO-PELVIC, LOWER LIMB, AND GLOBAL ALIGNMENT PARAMETERS
Frank Schwab, Jonathan Oren, Shaleen Vira, Barthelemy Liabaud, Bassel Diebo, Elizabeth Tanzi, Matthew Spiegel, Renaud Lafage, Jensen Henry, Virginie Lafage
NYU Hospital for Joint Diseases, New York, US

NORMATIVE VALUES FOR THE L5 INCIDENCE ANGLE AND ITS CORRELATION WITH OTHER SPINO-PELVIC PARAMETERS: A DATABASE OF 147 ASYMPTOMATIC SUBJECTS
Jean-Charles LeHuec, Dennis Dominguez, Arnaud Cogniet, Antonio Faundez
Spine Unit 2, Bordeaux University Hospital, CHU Pellegrin, Bordeaux, France; Division of Orthopaedics and Trauma Surgery, Geneva University Hospitals, Geneva, Switzerland

THE ROOTOGRAM TO SUCCESS?
Kiran Lingutla, Suribabu Gudipati, Michael McCarthy
University Hospital of Wales, Cardiff, UK

CLINICAL OUTCOME IN LUMBAR DECOMPRESSION SURGERY FOR SPINAL CANAL STENOSIS IN THE AGED POPULATION
Frank S. Kleinstück, Nils Ulrich, Christoph Woernle, Sebastian Winkelhofer, Jakob Burgstaller, Mazda Farshad, J. Oberle, Francois Pochet, Kan Min, LSOS Group
Department of Orthopedics, University Hospital Balgrist, University of Zurich, Switzerland; Department of Orthopedics and Neurosurgery, Spine Center, Schultess Clinic, Zurich, Switzerland; Department of Radiology, University Hospital Balgrist, University of Zurich, Switzerland; Horten Centre for Patient Oriented Research and Knowledge Transfer, University of Zurich, Switzerland; Department of Neurosurgery, Kantonsspital Winterthur, Switzerland; and On behalf of the LumbSten Research Collaboration, Zurich, Switzerland

THE EFFECT OF EPIDURAL STEROID INJECTION ON POSTOPERATIVE OUTCOME IN PATIENTS FROM THE LUMBAR SPINAL STENOSIS OUTCOME STUDY
Tamas F. Fekete, Christoph Woernle, Anne F. Mannion, Ulrike Held, Frank S. Kleinstück, Nils Ulrich, Daniel Haschtmann, Hans-Jürgen Becker, Francois Pochet, Robert Theiler, Johann Steurer, LSOS group
Schultess Klinik, Zurich, Switzerland; Balgrist University Hospital, Department of Orthopedics, University of Zurich, Switzerland; Horten Centre, University Zurich, Zurich, Switzerland; Triemli City Hospital, Zurich, Switzerland

CAN SPINOPELVIC PARAMETERS PREDICT PROXIMAL JUNCTION KYPHOSIS FOLLOWING CORRECTION OF SCHEUERMANN’S KYPHOSIS?
Luigi Aurelio Nasto, Ana Belen Perez Romera, Eyal Behrbalk, Saggah Tarek Shalabi, Hossein Mehdian
The Centre for Spinal Studies and Surgery, Queen’s Medical Centre University Hospital, Nottingham, UK
P65  TWO-YEAR CLINICAL RESULTS WITH AN INVESTIGATIONAL LUMBAR ZYGAPOPHYYSIS
JOINT RESTORATION DEVICE
Hans-Joerg Meisel, Konrad Seller, Achim Lüth, Karin Büttner-Janetz, Peter Stosberg,
Alexander Möser, Luis Pimenta
BG Clinic Bergmannstrost, Department of Neurosurgery, Halle/Saale, Germany

P66  THE RISK OF GETTING WORSE: PREDICTORS OF DETERIORATION AFTER DECOMPRESSIVE
SURGERY FOR LUMBAR SPINAL STENOSIS – A MULTICENTER OBSERVATIONAL STUDY
Ulf Skule Nerland, Asgeir Jakola, Charalampis Giannadakis, Ole Solheim, Clemens Weber,
Øystein Petter Nygaard, Sasha Gulati
Dept. of Neurosurgery, St. Olavs Hospital, Trondheim, Norway

P67  ABILITY OF THE SRS-SCHWAB ADULT SPINAL DEFORMITY CLASSIFICATION TO IDENTIFY
PATIENTS WITH SEVERE DISABILITY
Dennis Hallager Nielsen, Lars Valentin Hansen, Casper Rokkjær Dragsted, Nina Caroline
Peytz, Martin Gerhchen, Benny Dahl
Spine Unit, Department of Orthopaedic Surgery, Rigshospitalet, University of Copenhagen,
Copenhagen, Denmark

P68  RISK FACTORS AND CLINICAL IMPACT OF EARLY UNANTICIPATED REVISION SURGERY IN
ADULT SPINAL DEFORMITY
Susana Núñez Pereira, Ferran Pellisé, Alba Vila Casademunt, Montserrat Domingo Sabat,
Emre Acaroglu, Ahmet Alanay, Francisco Sánchez Pérez-Grueso, Frank Kleinstück, Juan
Bagó, European Spine Study Group ESSG
Vall d’Hebron Research Institute, Barcelona, Spain

P69  CAN A CASE MANAGER REDUCE FUNCTIONAL DISABILITY AND ABSENCE FROM WORK
FOR LUMBAR SPINAL FUSION PATIENTS? A CLINICAL RANDOMIZED STUDY WITH A TWO
YEARS FOLLOW-UP
Lisa Gregersen Oestergaard, Finn B. Christensen, Cody Eric Bünger, Randi Holm, Peter
Helmig, Rikke Sogaard, Claus Vinther Nielsen
Department of Physiotherapy and Occupational Therapy, Aarhus University Hospital,
Denmark; Department of Orthopaedic Surgery, Aarhus University Hospital Noerrebro,
Aarhus, Denmark; Region Hospital of Silkeborg, Orthopaedic department Silkeborg,
Denmark; Department of Public Health and Quality Improvement, Central Denmark
Region, Aarhus, Denmark; Department of Social Medicine and Rehabilitation, School of
Public Health, Aarhus University, Aarhus, Denmark
P70  AGE AND PRO-INFLAMMATORY GENE POLYMORPHISMS INFLUENCE ADJACENT SEGMENT DISC DEGENERATION MORE THAN FUSION IN PATIENTS TREATED FOR CHRONIC LOW BACK PAIN
Ahmad Omair, Anne F. Mannion, Gunnar Leivseth, Jeremy Fairbank, Marit Holden, Olle Hägg, Peter Fritzell, Jens I. Brox
Oslo University Hospital Rikshospitalet, Oslo, Norway; Spine Center Division, Schulthess Klinik, Zurich, Switzerland; Neuromuscular Diseases Research Group, University of Tromso, Norway; Nuffield Orthopaedic Centre, University of Oxford, Oxford, United Kingdom; Norwegian Computing Centre, Blindern, Oslo, Norway; Spine Center Göteborg, Gothenburg, Sweden; Neuro-ortopedic center, Länsjukhuset Ryhov, Jönköping, Sweden; Oslo University Hospital Ulleval, University of Oslo, Oslo, Norway

P71  RISK FACTORS FOR DEVELOPMENT OF ADJACENT SEGMENT DISEASE AFTER MINIMALLY INVASIVE TRANSFORAMINAL INTERBODY FUSION
Koichiro Ono, Kazuo Ohmori
Center for Spinal Surgery, Nippon Kokan Hospital, Kawasaki, Japan

P72  IMPACT OF THE CAGE POSITION ON THE LUMBAR SEGMENTAL LORDOSIS AFTER LATERAL LUMBAR INTERBODY FUSION
Bungo Otsuki, Shunsuke Fujibayashi, Hiroaki Kimura, Mitsuru Takemoto, Shuichi Matsuda
Graduate school of medicine, Kyoto University, Kyoto, Japan

P73  THE FUTURE OF SPINAL FUSION SURGERY ~ THE VERY OLD PATIENT (80+ YEARS): TECHNIQUES, COMPLICATIONS AND OUTCOME
Lukas Panzenboeck, Sebastian Kreuzer, Alexander Tuschel, Philipp Becker, Michael Ogon
Speising Orthopedic Hospital Vienna, Vienna, Austria

P74  THE INFLUENCE OF OBESITY AND AGE ON OUTCOMES OF MINIMALLY INVASIVE LUMBAR FUSION (MILIF): A SUBGROUP ANALYSIS OF A 1 YEAR PROSPECTIVE MULTICENTER OBSERVATIONAL STUDY
Wolfgang Senker, Ulrich Hubbe, Paulo Pereira, Khai Lam, Salvador Fuster, Neil Manson
Landesklinikum Mostviertel Amstetten, Amstetten, Austria

P75  MEP AND SEP INTRAOPERATIVE NEUROMONITORING WITH DEFORMITY CORRECTION SURGERY. SINGLE CENTRE EXPERIENCE OF 8 YEARS
Thomas Pfandlsteiher, Ahmed Ezzat Siam, Elsayed Shaheen, Cornelius Wimmer
Schön Klinik Vogtareuth, Spine Surgery and Scoliosis Centre, Vogtareuth, Germany

P76  THE EFFICACY & ACCURACY OF CONE-BEAM CT NAVIGATION ON SCREW POSITION IN PRIMARY CASES OF ADULT MAJOR DEFORMITY SURGERY
John Street, Jason Strelzow, Daniel Mendelsohn, Nicolas Dea, Marcel Dvorak, Charles Fisher
University of British Columbia, Vancouver, Canada
P77 COMPLETE REDUCTION DOES NOT RESULT IN BETTER OUTCOMES IN LUMBAR LOW GRADE SPONDYLOLISTHESIS (LGS) WITH NEUROGENIC SYMPTOMS AFTER SINGLE LEVEL MINIMALLY INVASIVE SURGERY TRANSFORAMINAL LUMBAR INTERBODY FUSION (MISTLIF) – A 5 YEAR FOLLOW-UP STUDY
Kae Sian Tay, Anupreet Bassi, William Yeo, Wai Mun Yue
Singapore General Hospital, Singapore, Singapore

P78 COST-UTILITY STUDY AND LIFE QUALITY IMPROVEMENT AFTER INSTRUMENTED LUMBAR FUSION IN ELDERLY PATIENTS OVER 80 YEARS OLD
Félix Tomé-Bermejo, Ángel R. Piñera, Javier Melchor Duart Clemente, Luis Alvarez, Marta Martín Fernández
Spine Department, Fundación Jiménez Díaz University Hospital, Madrid, Spain

P79 DO SURGICAL EXPECTATIONS CHANGE DEPENDING ON FIRST TIME SURGERY OR RE OPERATION? A PROSPECTIVE COHORT STUDY IN LUMBAR SPINE SURGERY
Gemma Vilà Canet, Sergi Rodríguez-Alabau, Augusto Covaro, Ana García de Frutos, Maite Ubierna, Enric Cáceres
Hospital Universitari Quirón-Dexeus, Barcelona, Spain

P80 INTERVERTEBRAL SPACE RESTORATION AFTER LUMBAR DISCECTOMY: IS VERTEBRAL END PLATE PERFORATION THE ANSWER?
Miha Vodicar, Robert Kosak, Matevz Gorensek, Robert Korez, Tomaz Vrtovec, Jadran Koder, Rok Vengust
University Medical Centre Ljubljana, Department of Orthopaedic Surgery, Ljubljana, Slovenia; University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia; University Medical Centre Ljubljana, Institute of Radiology, Ljubljana, Slovenia

P81 RISK FACTORS ASSOCIATED WITH DEEP SURGICAL SITE INFECTIONS AFTER PRIMARY ADULT DEGENERATIVE LUMBAR SCOLIOSIS: SYSTEM ANALYSIS OF 1727 ADULTS
Dingjun Hao, En Xie
Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

P82 COMPARISON OF STAGED RECONSTRUCTION WITH EXTREME LATERAL INTERBODY FUSION (XLIF) AND MULTILEVEL CORRECTIVE PLIF/TLIF FOR ADULT THORACOLUMBAR KYPHOSCOLIOTIC DEFORMITY
Tokumi Kanemura, Kotaro Satake, Naoki Segi, Hidetoshi Yamaguchi
Department of Spine & Orthopedic Surgery, Konan Kosei Hospital, Konan-City, Japan

P83 DOES THE CURVE DIRECTION REMAIN CORRELATED WITH THE DOMINANT SIDE OF TONSILLAR ECTOPIA WHEN SYRINGOMYELIA IS ABSENT? AN ANALYSIS OF SCOLIOTIC CURVE PATTERNS IN CHIARI I MALFORMATION WITHOUT SYRINGOMYELIA
Huang Yan, Zezhang Zhu, Zhen Liu, Bangping Qian, Yong Qiu
From the Spine Surgery, the Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China
P84 WHICH FACTORS INFLUENCE THE SURGERY VS. NON-SURGERY DECISION FOR ADULT IDIOPATHIC SCOLIOSIS PATIENTS WITH GRAY ZONE (40–55 DEGREE) MAIN THORACIC CURVES?
Caglar Yilgor, Meric Enercan, Azmi Hamzaoglu, Ferran Pellise, Paco Sanchez Perez-Grueso, Emre Acaroglu, Ibrahim Obeid, Frank Kleinstuck, Ahmet Alanay, ESSG European Spine Study Group
Acibadem University School of Medicine, Istanbul Spine Center, Istanbul, Turkey; Spine Unit, Hospital Valle Hebron Barcelona, Spain; Hospital De La Paz, Madrid, Spain; Orthopedic Spine, Ankara Spine Center, Turkey; CHU Bordeaux Pellegrin Hospital, France; Department of Orthopaedics, Schulthess Klinik, Zurich, Switzerland; Fundació Institut de Recerca Vall Hebron, Barcelona, Spain

P85 MENTAL HEALTH AND SELF IMAGE PERCEPTION OF NON-DISABLED ADULT IDIOPATHIC SCOLIOSIS PATIENTS HAVING MILD TO MODERATE CURVES COMPARED TO NORMAL POPULATION
Caglar Yilgor, Meric Enercan, Azmi Hamzaoglu, Ferran Pellise, Paco Sanchez Perez-Grueso, Emre Acaroglu, Ibrahim Obeid, Frank Kleinstuck, Ahmet Alanay, ESSG European Spine Study Group
Acibadem University School of Medicine, Istanbul Spine Center, Istanbul, Turkey; Spine Unit, Hospital Valle Hebron Barcelona, Spain; Hospital De La Paz, Madrid, Spain; Orthopedic Spine, Ankara Spine Center, Turkey; CHU Bordeaux Pellegrin Hospital, France; Department of Orthopaedics, Schulthess Klinik, Zurich, Switzerland; Fundació Institut de Recerca Vall Hebron, Barcelona, Spain

Thoraco-Lumbar Spine: Trauma, Tumour

P86 THE USAGE OF THE METHODS OF PREVENTION OF VERTEBRAL FRACTURES ADJACENT TO THE TRANSPEDICULAR VERTEBRAL SYSTEM
Igor Basankin, Karapet Takhmazyan, Sergey Malakhov, Asker Afaunov, Dmitry Ptashnikov, Nikolay Gavryushenko, Olga Ponkina, Vladimir Shapovalov
Research Institute Krasnodar Regional Hospital, Krasnodar, Russia

P87 THE EPIDEMIOLOGY OF SURGICALLY TREATED SPINAL FRACTURES IN EASTERN DENMARK
Thomas Pensbo-Madsen, Kiran Anderson, Corrado Lucantoni, Ram Babu, Martin Gehrchen, Fin Biering-Sørensen, Benny Dahl
Spine Unit, Department of Orthopaedic Surgery, Rigshospitalet and University of Copenhagen, Denmark; Department of Spinal Cord Injuries, Rigshospitalet and Glostrup Hospital and University of Copenhagen, Denmark

P88 IS IT SAFE THE PERCUTANEOUS PEDICLE SCREW FIXATION AFTER SPINAL CANAL DECOMPRESSION IN MAGERL TYPE A3 THORACOLUMBAR BURST FRACTURES?
Moon Soo Han, Jung-Kil Lee
Chonnam National University Medical School & Research Institute of Medical Sciences, South Korea

P89 BLOOD LOSS IN SPINAL TUMOUR SURGERY: EVALUATION OF INFLUENCING FACTORS
Naresh Kumar, Aye Sandar Zaw
National University Health System, Singapore, Singapore
P90  VERSATILITY OF PERCUTANEOUS PEDICULAR SCREW FIXATION IN METASTATIC SPINE TUMOUR SURGERY
Naresh Kumar, Aye Sandar Zaw, Rishi Malhotra, Pang Hung Wu, Milindu Makandura
National University Health System, Singapore, Singapore

P91  FUNCTIONAL AND RADIOLOGICAL RESULTS OF TRANSPEDICULAR ENDDPLATE REDUCTION AND BONE AUTOGRRAFT WITH POSTERIOR INSTRUMENTATION FOR AO TYPE A3.1 THORACOLUMBAR BURST FRACTURES
Michael Osti, Julia Wolfram, Werner Ploner, Karl Peter Benedetto
Academic Hospital Feldkirch, Feldkirch, Austria

Growing Spine

P92  THORACIC SAGITTAL PLANE VARIATIONS BETWEEN PATIENTS WITH MODERATE THORACIC ADOLESCENT IDIOPATHIC SCOLIOSIS AND HEALTHY ADOLESCENTS
Alberto Núñez Medina, Javier Pizones, Felisa Sánchez-Mariscal, Lorenzo Zúñiga Gómez, Enrique Izquierdo
Hospital Universitario de Getafe, Madrid, Spain

New Techniques, Imaging, Patient Safety, Infection, Complications

P93  SPINAL INFECTION IN CHILDREN AND TEENAGERS
Hamdan Abdelrahman, Kais Abu Nahleh, Mootaz Shousha, Heinrich Boehm
Zentralklinik Bad Berka, Germany; Assiut University Hospitals, Egypt

P94  1030 PATIENTS TREATED WITH MINIMALLY INVASIVE OZONE DISCOLYSIS IN LUMBAR DISC HERNIATION: 12 MONTHS FOLLOW-UP
Alejandro Ortiz, Cesar Alcantara-Canseco, Eduardo Rivero-Sigarroa, Jose Luis Hernandez-Oropeza
Hospital Medica Sur, Mexico City, Mexico

P95  LOW PROFILE PELVIC FIXATION: ANATOMIC PARAMETERS FOR NEW EXTRA-ARTICULAR ILIAC FIXATION VERSUS SACRAL ALAR-ILIAC FIXATION
Veronica Familiar, Julia Montoya, Marta Martin-Fernandez, Angel R. Piñera, Felix Tome, Javier M. Duart, Francisco M. Garzon, Luis Alvarez
Fundación Jiménez Díaz, Madrid, Spain

P96  ARE TRADITIONAL RADIOGRAPHIC METHODS ACCURATE PREDICTORS OF PEDICLE MORPHOLOGY?
Siddharth Badve, William Lavelle, Nathaniel Ordway, Brandon Clair, Stephen Albanese
State University of New York & Upstate University Medical Center, Mumbai, India

P97  MINIMALLY INVASIVE TRANSFORAMINAL LUMBAR INTERBODY FUSION [MI-TLIF]: A TAILOR MADE SOLUTION FOR SELECTED FAILED BACK
Shashidhar Bangalore Kantharajanna, Arvind Gopalrao Kulkarni
Bombay Hospital and Medical Research Center, Mumbai, India
P98  SURGICAL OUTCOMES OF SPINAL SURGERY FOR PATIENTS WITH LONG-TERM HEMODIALYSIS  
Shunichi Toki, Masahiro Kashima, Takefumi Nakagawa, Masaru Nakamura, Shunji Nakano, Takashi Chikawa  
Tokushima Municipal Hospital, Tokushima, Japan  

Jaime Diaz de Atauri Bosch, Oscar Zabalza Mantilla, Mikel Ayala García  
Clinica Ercilla, Mutualia Bizkaia, Bilbao, Spain; Hospital San Jose, Mutualia Araba, Bilbao, Spain  

P100  INTRAOPERATIVE NEUROMONITORING (IONM) MAY NOT PREDICT ALL POSTOPERATIVE NEUROLOGICAL ADVERSE EVENTS IN ADULT DEFORMITY SURGERY. A SCOLI-RISK-1 TRIAL SUBANALYSIS  
Lawrence G. Lenke, Christopher I. Shafrey, Branko Kopjar, Kenneth Cheung, L. Carreon,  
Frank Schwab, O. Boachie-Adjei, K. Kebaish, C. Ames, Y. Qiu, Y. Matsuyama, B. Dahl,  
H. Mehdian, S. Lewis, S. Berven  
Spine Unit, Hospital Valle Hebron, Vall Hebron Institut de Recerca, Barcelona, Spain;  
University of Toronto, Canada; Washington University School of Medicine; University of Virginia Health System, University of Washington, Washington, US; University of Hong Kong, Hong Kong, China; Norton Leatherman Spine Center, NYU-Hospital for Joint Diseases, Hospital for Special Surgery, Johns Hopkins University, University of California,  
San Francisco, US; NanJing University Medical School, Hamamatsu University School of Medicine, China; Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark;  
Center for Spinal Studies and Surgery, University Health Network, University of California,  
San Francisco, US  

P101  ADVERSE EVENTS IN ADULT SPINAL DEFORMITY PROCEDURES  
Evalina L Burger, Michael S. Chang, Sean Molloy, Vincent Fièvre  
University of Colorado SOM, US; Sonoran Spine, US; NHS Royal National Orthopaedic Hospital UK; Centre Orthopédique Santy, France  

P102  OPTIMIZING PEDICLE SUBTRACTION OSTEOTOMY TECHNIQUES: A NEW REDUCTION PLIER TO INCREASE TECHNICAL SAFETY AND ANGULAR REDUCTION EFFICIENCY  
Antonio Faundez, Jean Charles LeHuec, Lars Hansen, Martin Gehrchen  
Division of Orthopaedic Surgery, Geneva University Hospitals, Geneva, Switzerland; Spine Unit 2, University Victor Segalen, Bordeaux, France; Department of Orthopaedic Surgery, National University Hospital of Copenhagen, Copenhagen, Denmark  

P103  PREOPERATIVE ASSESSMENT OF URETER USING DUAL-PHASE ENHANCED 3D-CT FOR LATERAL LUMBAR INTERBODY FUSION  
Shunsuke Fujiyayashi, Bungo Otsuki, Hiroaki Kimura, Shuichi Matsuda  
Department of Orthopaedic Surgery, Graduate School of Medicine, Kyoto University,  
Kyoto, Japan
THE ADVANTAGEOUS EFFECT OF IODINE-COATED IMPLANTS IN PYOGENIC SPONDYLITIS
Moriyuki Fujii, Hideki Murakami, Satoru Demura, Satoshi Kato, Katsuhiro Yoshioka, Takashi Igarashi, Noritaka Yonezawa, Hiroyuki Tsuchiya
Department of Orthopaedic Surgery Kanazawa University, Kanazawa, Japan

ARTIFICIAL NEURAL NETWORKS AS A TOOL FOR THE AUTOMATED ANALYSIS OF MEDICAL IMAGES OF THE SPINE
Fabio Galbusera, Tito Bassani, Marco Brayda-Bruno, Francesco Costa, Guglielmo Cannella, Alberto Zerbi, Hans-Joachim Wilke
IRCCS Istituto Ortopedico Galeazzi, Milan, Italy; Ulm University, Ulm, Germany

AUGMENTED AND VIRTUAL REALITY APPLICATIONS TO SHOW COMPLEX SPINE PATHOLOGIES: FIRST VERSION
Marcelo Galvez, Gonzalo Rojas, Jorge Fuentes, Takeshi Asahi, Carlos Montoya, Aaron Vidal, William Currie, Andres Chahin
Department of Radiology, Clínica las Condes, Santiago, Chile

MORBIDITY AND MORTALITY AND SURGICAL STRATEGY IN PATIENTS WITH ANKYLOSING SPONDYLITIS SPINE FRACTURES
Jens Gempt, Elisabeth Türök, Martin Vazan, Thomas Huber, Bernhard Meyer, Yu-Mi Ryang
Neurochirurgische Klinik und Poliklinik, Abteilung für Neuroradiologie, Klinikum rechts der Isar, Technische Universität München, Munich, Germany

INFLAMMATORY BLOOD LABORATORY LEVELS AS MARKERS OF DEGENERATIVE LUMBAR SCOLIOSIS SURGERY INFECTION: A SYSTEMATIC REVIEW AND META-ANALYSIS
Dingjun Hao, En Xie
Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

C2 NERVE DYSFUNCTION ASSOCIATED WITH POSTERIOR UPPER CERVICAL SPINE SURGERY: A CASE REPORT OF 21 AND A LITERATURE REVIEW
Da-Geng Huang, Ding-Jun Hao, Bao-Rong He, Tuan-Jiang Liu, Xiao-Dong Wang, Qi-Ning Wu, Hua Guo
Department of Spine Surgery, Honghui Hospital, Xi’an Jiaotong University Health Science Center; Xi’an, China

COMPARISON BETWEEN ANTERIOR AND POSTERIOR APPROACH OF DEBRIDEMENT AND INSTRUMENTED FUSION FOR TREATING LUMBAR SPINAL BRUCELLOSIS
Jun-Song Yang, Ding-Jun Hao, Li-Min He, Tuan-Jiang Liu, Yuan-Ting Zhao
Department of Spinal Surgery, Hong-Hui Hospital, Medical College of Xi’an Jiaotong University, Xi’an, China

THE CLINICAL VALIDITY OF DEGENERATIVE DISC DEGENERATION ON MAGNETIC RESONANCE IMAGING FOR THE LUMBAR RELATED SYMPTOMS
Masahiko Kanamori, Taketoshi Yasuda, Kayo Suzuki, Kazuo Ohmori
University of Toyama, Toyama City, Japan
P112 DOES LUMBAR INTERVERTEBRAL DISC DEGENERATION AFFECT PSOAS MAJOR MUSCLES?
Teruo Kita, Kazushi Takayama, Hiroaki Nakamura, Fumiaki Kanematsu, Toshiya Yasunami, Kazuya Nishino, Hideki Sakanaka, Yoshiki Yamano
Dept. of Orthopaedic Surgery, Seikeikai Hospital, Osaka, Japan; Dept. of Orthopaedic Surgery, Osaka City University Graduate School of Medicine, Osaka, Japan; Dept. of Orthopaedic Surgery, Saiseikai Nakatsu Hospital, Osaka, Japan

P113 THROMBOEMBOLIC COMPLICATIONS FOLLOWING SURGICAL TREATMENT FOR DEGENERATIVE SPINAL DISEASE
Casper Winther Larsen, Karsten Thomsen, Lars Peder Sørensen, Morten Jenstrup, Frederik Birkebæk Thomsen
Institute of Health and Medical sciences, University of Copenhagen, Denmark; Department of Spinal Surgery and Department of Anaesthesiology, Aleris-Hamlet Hospital, Denmark; Department of Urology, Frederiksberg Hospital, Copenhagen, Denmark

P114 HOW WELL CAN THE CLINICIAN APPRAISE THE SEVERITY AND IMPACT OF A PATIENT’S BACK PROBLEM DURING THE CLINICAL CONSULTATION?
Anne F Mannion, Urs Mutter, Sabrina Donzelli, Monia Lusini, Frank S Kleinstück, Salvatore Minnella, Stefano Negrini, Fabio Zaina
Spine Centre, Schulthess Clinic, Zurich, Switzerland; ISICO (Italian Scientific Spine Institute), Milan, Italy; University of Brescia, Italy; IRCCS Don Gnocchi, Milan, Italy

P115 EFFECT OF TERIPARATIDE ON SUBSEQUENT VERTEBRAL FRACTURE AFTER LONG INSTRUMENTED FUSION SURGERY FOR OSTEOPOROTIC VERTEBRAL COLLAPSE
Toshiya Tachibana, Shinichi Inoue, Fumihiro Arizumi, Shinichi Yoshiya
Department of Orthopaedic Surgery, Hyogo College of Medicine, Japan

P116 PREVALENCE AND MECHANISMS OF ADJACENT SEGMENT DISEASE FOLLOWING LUMBAR SPINE FUSION FOR DIALYSIS-ASSOCIATED SPONDYLOSIS IN LONG-TERM HEMODIALYSIS PATIENTS
Toshiya Tachibana, Shinichi Inoue, Fumihiro Arizumi, Shinichi Yoshiya
Department of Orthopaedic Surgery, Hyogo College of Medicine, Nishinomiya, Japan

P117 A MEASURE TO AVOID PLEURA INJURIES IN XLIF AT UPPER LUMBAR LEVELS
Takao Nakajima, Yong Kim, Masabumi Miyamoto
Dept. of Orthopedic Surgery, Nippon Medical School, Chiba Hokusoh Hospital, Inzai-City, Chiba, Japan

P118 LEARNING CURVE OF THE SURGICAL TECHNIQUE OF XLIF
Takao Nakajima, Yong Kim, Masabumi Miyamoto
Dept. of Orthopedic Surgery, Nippon medical school, Chiba Hokusoh Hospital, Inzai-City, Chiba, Japan

P119 GERIATRIC RISK IN THE SURGICAL MANAGEMENT OF INFECTIOUS SPONDYLITIS
Bong-Soon Chang, Jae Hong Ha, Choon-Ki Lee, Hyoungmin Kim, Jong-Hun Jung, Doohyun Kwon, Guang Bin Zheng, Jae Woo Park
Department of Orthopaedic Surgery, Seoul National University Hospital, Seoul, Korea
P120  IS ASYMMETRICAL PEDICLE SUBTRACTION OSTEOTOMY AN EFFECTIVE METHOD TO RECONSTRUCT CORONAL AND SAGITTAL BALANCE FOR ANKYLOSING SPONDYLITIS PATIENTS WITH THORACOLUMBAR KYPHOSCOLIOTIC DEFORMITY?
Bangping Qian, Yong Qiu, Mingliang Ji, Jun Hu
Spine Surgery, the Affiliated Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

P121  RISK FACTORS OF NEW SYMPTOMATIC VERTEBRAL COMPRESSION FRACTURES IN OSTEOPOROTIC PATIENTS UNDERGONE PERCUTANEOUS VERTEBROPLASTY
Hai-long Ren, Jian-Ming Jiang, Jian-Ting Chen, Ji-Xing Wang
Nanfang Hospital, Southern Medical University, Guangzhou, China

P122  IMPLANTS CAN BE RETAINED IN MOST CASES OF EARLY SURGICAL SITE INFECTION AFTER INSTRUMENTED SPINAL SURGERY
Ivar Rossvoll, Øyvind Sletten, Torsten Bräuer, Rainer Knobloch
Trondheim University Hospital, NTNU, Trondheim, Norway

P123  EF-LIF: (EXTRAFORAMINAL FACETECTOMY LIF). A NEW MODIFICATION AND IMPLANT DESIGN FOR LUMBAR SPINAL FUSION. CLINICAL AND RADIOLOGIC RESULTS OF THE FIRST 110 CASES
Ronald J. Sabitzer
Orthopedic Department, Otto Wagner Hospital (OWS) Vienna, Vienna, Austria

P124  RESULTS OF LONG FUSIONS TO THE SACRUM FOR ADULT SPINE DEFORMITY
Charles Sansur, Andrew Frost, Niall Craig, John Schmidt, Jennifer McCool, Megan Dumas
University of Maryland Medical Center, NHS Grampian, Leesburg, US

P125  COMPARISON OF ADVERSE EVENTS IN SHORT AND LONG CONSTRUCTS IN BOTH POSTERIOR AND ANTERIOR SPINAL SURGERIES
Charles Sansur, Andrew Frost, Niall Craig, John Schmidt, Jennifer McCool, Megan Dumas
University of Maryland Medical Center, NHS Grampian, Leesburg, US

P126  COMPUTER ASSISTED ROBOTIC SURGERY IN OCTOGENARIANS A CASE CONTROLLED STUDY
Josh Schroeder, Eyal Itsayek, Yair Barzilay, Leon Kaplan
Hadassah Hebrew University Medical Center, Jerusalem, Israel

P127  NARCOTIC USE AMONGST SPINE PATIENTS. TRENDS AND BELIEFS
Josh Schroeder, Jennifer Shue, Leon Kaplan, Joseph Nguyen, Frederico Girardi
Hadassah Hebrew University Medical Center, Jerusalem, Israel

P128  SPINAL EPIDURAL ABSCESS: PATHOGENESIS, CAUSATIVE ORGANISMS AND TREATMENT ALGORITHM
Ahmed Shawky, Christian Bickel, Ali Ezzati
Helios Hospitals Erfurt, Erfurt, Germany; Assist University Hospitals, Assiut, Egypt
P129 PATIENT AND SURGEON RADIATION EXPOSURE DURING SPINAL INSTRUMENTATION USING INTRAOPERATIVE CT-BASED NAVIGATION
John Street, Daniel Mendelsohn, Jason Strelzow, Juliet Batke, Nicolas Dea, Marcel Dvorak, Charles Fisher
University of British Columbia, Vancouver, Canada

P130 RADIATION-FREE PEDICLE SCREW INSERTION METHOD FOR THE CERVICAL AND THORACIC SPINE. THE SCREW GUIDE TEMPLATE SYSTEM
Taku Sugawara, Naoki Higashiyma, Shuichi Kaneyama, Masato Takabatake, Masatoshi Sumi
Research Institute for Brain and Blood Vessels, Akita, Japan

P131 A NOVEL EVALUATION METHOD FOR NEURAL FUNCTIONS OF CEREBROSPINAL TRACT IN HUMAN USING FUNCTIONAL MAGNETIC RESONANCE IMAGING TECHNIQUE
Eiji Takasawa, Mitsunari Abe, Haku Iizuka, Kenji Takagishi, Takashi Hanakawa
Department of Orthopaedic Surgery, Gunma University Graduate School of Medicine, Maebashi, Japan

P132 DECREASED MUSCLE MASS OF LOWER EXTREMITIES IN LUMBAR SPINAL STENOSIS: IS IT ASSOCIATED WITH THE INCREASED RISK OF A FALL AND THE LOSS OF HEALTH-RELATED QUALITY OF LIFE?
Eiji Takasawa, Haku Iizuka, Yoichi Iizuka, Yasunori Sorimachi, Tokue Mieda, Kenji Takagishi
Department of Orthopaedic Surgery, Gunma University Graduate School of Medicine, Maebashi, Japan

P133 PREOPERATIVE COMPUTED TOMOGRAPHIC (CT) SCAN TEMPLATING IN ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS): IS IT REALLY NECESSARY?
Mark Tan, Reuben Soh, Wilona Lee
KK Women’s and Children’s Hospital, Singapore, Singapore

P134 EVALUATION OF THE INFLUENCE OF DIFFERENT ARMS POSITION ON SAGITTAL SPINAL ALIGNMENT USING VIDEO-RASTERSTEREOGRAPHY
Lucrezia Tognolo, Massimiliano Mangone, Teresa Venditto, Marco Paoloni, Valter Santilli
Department of Physical and Rehabilitative Medicine, University “Sapienza”, Rome, Italy

P135 INTRADISCAL METHYLENE BLUE IN THE TREATMENT OF CHRONIC DISCOGENIC LOW BACK PAIN. COMPARATIVE AMBISPECTIVE STUDY
Félix Tomé-Bermejo, Javier Cervera-Irimia, Ángel R. Piñera, Javier Melchor Duart Clemente, Luis Alvarez
Spine Department, Fundación Jiménez Díaz University Hospital, Madrid, Spain

P136 BLEEDING PROFILE AND TRANSFUSION REQUIREMENTS IN ADULT SPINAL DEFORMITY SURGERY
Lidia Mora, Alba Vila-Casademunt, Ferran Pellisé, M. José Colomina, Montse Domingo-Sábat, Francisco Javier S. Pérez-Grueso, Ahmet Alanay, Emre Acaroglu, Joan Bagó, ESSG European Spine Study Group
Hospital Vall Hebron, Barcelona, Spain; Vall Hebron Institut de Recerca, Barcelona, Spain; Hospital De La Paz, Madrid, Spain; Acibadem University School of Medicine, Istanbul, Turkey; Ankara Spine Center, Ankara, Turkey
P137 RISK FACTORS OF GASTROINTESTINAL HEMORRHAGE AFTER LONG POSTERIOR INSTRUMENTATION AND FUSION IN DEGENERATIVE ADULT LUMBAR SCOLIOSIS
Dingjun Hao, En Xie
Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

P138 RISK FACTORS OF SURGICAL SITE INFECTION IN ADULT DEGENERATIVE LUMBAR SCOLIOSIS: DETECTION AND MANAGEMENT BASED ON SERIAL PROEAELEITONIN MEASUREMENTS: AN OPEN-LABEL RANDOMISED TRIAL
En Xie, Dingjun Hao
Department of Spine Surgery, Hong Hui Hospital, Xi’an Jiaotong University College of Medicine, Xi’an, China

P139 ROD BREAKAGE IN LONG FUSIONS TO THE SACRUM FOR SCOLIOSIS IN ADULTS AGED FORTY YEARS OR OLDER: INCIDENCE AND RISK FACTORS
Leilei Xu, Zezhang Zhu, Feng Zhu, Bangping Qian, Yong Qiu
Spine Surgery, Drum Tower Hospital of Nanjing University Medical School, Nanjing, China

P140 STENOTIC RATIO IS THE MOST USEFUL PARAMETER TO IDENTIFY PATIENTS WITH LUMBAR FORAMINAL STENOSIS NEEDING SURGERY OR NOT. MRI STUDY USING 3D T1 SPACE SEQUENCE
Kentaro Yamada, Yuichiro Abe, Yasushi Yanagibashi, Takahiko Hyakumachi, Shigenobu Satoh
Wajokai Eniwa Hospital, Eniwa City, Hokkaido, Japan
Save the Date

EUROSPINE 2016
5–7 October 2016
Berlin, Germany

www.eurospine2016.eu