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<th>TUESDAY JUNE 3</th>
<th>WEDNESDAY JUNE 4</th>
<th>THURSDAY JUNE 5</th>
<th>FRIDAY JUNE 6</th>
<th>SATURDAY JUNE 7</th>
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<tr>
<td>08.00 Membership Committee Meeting</td>
<td>07.00-07.45 Breakfast</td>
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<td>06.30 Breakfast</td>
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<td>09.30 Strategy Group Meeting</td>
<td>07.45 Welcome</td>
<td>07.45-08.45 Special Poster Session I</td>
<td>07.30-08.20 Outcomes</td>
<td>07.45-08.45 Special Poster Session II</td>
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<td>12.00 ExCom Meeting</td>
<td>08.00-09.00 Herniated Disc</td>
<td>09.00-10.00 Biology and degeneration</td>
<td>08.22-09.02 Analysis of Physio-logy and Psychology</td>
<td>09.00-10.00 Osteoporotic vertebral compression fracture</td>
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<td>15.00 Registration opens</td>
<td>09.00-10.00 Disc Degeneration</td>
<td>10.00-10.30 COFFEE</td>
<td>09.10-10.10 General Poster Session 1 and 2</td>
<td>10.00-10.30 COFFEE</td>
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<td>18.00 Welcome Reception</td>
<td>10.30-11.40 Complications</td>
<td>10.30-11.00 Low Back Pain</td>
<td>10.10-10.40 COFFEE</td>
<td>10.30-11.00 Invited Lecture #3</td>
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<td>11.40-12.10 Invited Lecture #1</td>
<td>11.00-11.40 Harry Farfan Presidential Lecture</td>
<td>10.40-11.00 Fellowship Award Ceremony</td>
<td>11.00-12.00 Lumbar Spinal Stenosis</td>
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<td>12.10-13.30 LUNCH</td>
<td>11.40-12.20 Presidential address</td>
<td>11.00-12.10 The ISSLS Prize Papers</td>
<td>12.10-12.20 Announcement – Best paper and poster awards</td>
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<td>14.30-15.30 Degenerative Changes</td>
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<td>13.30-14.30 Surgery</td>
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<td>15.30-16.00 COFFEE</td>
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<td>14.30-15.00 Invited Lecture #2</td>
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<td>16.00-16.40 Disc Degeneration</td>
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<td>15.00-15.30 Quality of Life and Infection</td>
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<td>16.40-17.40 Symposium #1</td>
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<td>15.30-16.00 COFFEE</td>
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<td>17.45- First Business Meeting</td>
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<td>16.00-16.40 Imaging</td>
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<td>16.40-17.20 Symposium #2</td>
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<td>17.25 Second Business meeting</td>
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<td>19.00 Banquet</td>
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- Oral presentations June 4
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- Oral presentations June 6
- Oral presentations June 7
- Special posters
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Officers 2013-2014

President	Jeremy Fairbank
Immediate Past President	Kazuhisa Takahashi
First Vice President	Robert Gunzburg
Second Vice President	James Kang
Secretary	Tom Oxland
Secretary-Elect	S Tim Yoon
Treasurer	Helena Brisby

Regional Representatives

Africa	Peter Hagembe (2013-2016)
Asia/Pacific	Ashish Diwan (2012-2015)
Canada	Stuart McGill (2013-2016)
Europe	Keita Ito (2013-2016)
United Kingdom	Patricia Dolan (2011-2014)
Japan	Seiji Ohtori (2013-2016)
Central U.S.	Frank Phillips (2010-2013)

Chairmen and others

Fellowship Chairperson	Michelle Battié
Program Chairperson	David Wong
Membership Chairperson	Teija Lund
Instructional Course Chairman	Margareta Nordin
Scientific Representatives	Paul Hodges
		Jaro Karppinen
		Dawn Elliott
By-Laws Chairman	Dr Gunnar Andersson

ISSLS Program Committee 2013-2014

David Wong
Peter Robertson
Sally Roberts

Secretariat

ISSLS
e-mail: katarina.olinder@gu.se
C/o Katarina Olinder Eriksson
phone: + 46 31 786 44 36
Institute of Clinical Sciences
at the Sahlgrenska Academy
University of Gothenburg
PO Box 426
SE 405 30 Gothenburg Sweden
Dear President Fairbank, ISSLS members, and guests

It is with great pleasure that we welcome you to Seoul, Korea for our 41st Annual Meeting of the International Society for the Study of the Lumbar Spine.

The City of Seoul has 600 years of history. You can find not only historical and cultural heritage but also the most advanced high technologic industry. Here in the City of Seoul, you can experience that the old traditional culture is well balanced with modern art. The climate is comfortable in early June. We hope you enjoy the meeting as well as take the time to feel the real beauty of Seoul.

The program committee has planned a very interesting and informative program. Sessions will cover various subjects regarding the latest research in lumbar spine, along with guest lectures and debates. I am sure that this meeting will be a suitable platform to share ideas and knowledge of the most recent developments about basic and clinical science of the lumbar spine.

Our administrator, Ms. Katarina Olinder Eriksson, together with our Secretary, Dr. Tom Oxland, Program Committee Chairman Dr. David Wong and Korean ISSLS members put in a tremendous amount of effort to make this year’s meeting a great success.

Enjoy the 41st ISSLS Annual Meeting and I welcome everybody once again and congratulate on a successful meeting. Thank you.

Sincerely,

Hwan-Mo Lee, MD
Local Host
FELLOWSHIPS AND AWARDS

ISSLS Wiltse Lifetime Achievement Award sponsored by NuVasive, Speed of Innovation
A yearly award for exceptional achievement in the spinal field. This award will be announced at the Banquet dinner on Thursday, June 5

The ISSLS Prize for Lumbar Spine Research
Sponsored by DePuy Synthes Spine. The ISSLS Prize winning papers will be presented on Thursday, June 5 at 11.00

The ISSLS Clinical Travelling Fellowship
Sponsored by Globus Medical, to be announced during the Fellowship ceremony, Thursday, June 5 at 10.40

Best Paper and Poster Award sponsored by Ono Pharmaceutical Co., Ltd
The two best paper and poster presentations will be announced during Closing Remarks on Saturday June 7 at 12.30

Welcome to next year's ISSLS Annual Meeting in San Francisco, June 8-12, 2015
SOCIAL PROGRAMS

(included in registration fee for all)
*Additional tickets, if available, can be purchased at the registration desk*

Welcome reception
**Time:** June 3 (Tue) 18:00  
**Location:** Official President’s Residence at the Yonsei University Campus  
**Dress code:** Smart casual  
All participants are cordially invited to the Welcome Reception to be held at the Official Presidents Residence. This is a great opportunity to mingle with one another over delicately prepared buffet.

Afternoon outing to Korean Folk Village
**Time:** June 5 (Thu), 13:00 – 21:00  
**Dress code:** Casual  
As a home for wide collections of the Korean cultural artifacts, the Korean Folk Village is a unique place to experience natural atmosphere with over 260 Korean traditional houses, which are a reminiscent of the late Joseon Dynasty. (Brown Bag as a lunch box and Korean food for dinner will be served)

Banquet
**Time:** June 6 (Fri) 19:00  
**Venue:** Grand Hilton Seoul  
**Dress code:** Business attire  
All participants are welcomed to join in this formal dinner to meet professionals and newcomers at the banquet and strengthen professional networks and friendship.
(included in registration fee for accompanying persons)
Additional tickets, if available, can be purchased at the registration desk

**Changdeokgung & the Secret Garden**
**Date/Time:** June 4 (Wed), 09:00~13:30

Changdeokgung Palace is one of the historic attractions representing traditional beauty of Korea. It was the second royal palace built followed by the completion of Gyeongbukgung Palace in 1405. Changdeokgung Palace’s rear garden or so-called the “Secret Garden” was constructed during the reign of King Taejong and served as a resting place for royal family members. Changdeokgung was designated as the UNESCO’s World Cultural Heritage in 1997.

**National Museum of Korea**
**Date/Time:** June 6 (Fri), 09:00~13:30

The National Museum of Korea is ranked as the sixth largest museum in the world. The Museum houses more than 140,000 precious Korean cultural assets including national relics and artifacts from ancient days to the modern era.
**Meeting Venue**
Yonsei University Health System
Severance Hospital
Eunmyung Auditorium: Main Congress venue at Main Building, 6th Floor
Address: 50-1 Younsei-Ro, Seodaemun-Gu, Seoul 120-752, KOREA
Website: [http://www.yuhs.or.kr/en/](http://www.yuhs.or.kr/en/)

**Conference Shuttle Bus**
Shuttle buses will be operated between Severance Hospital and Grand Hilton Seoul hotel for ISSLS 2014 participants during the Conference. See next page

**Internet**
Internet is provided at the venue and the log-in is:
SSID: iseverance (5G)
Password: severance

**Conference registration desk**
The registration desk and conference secretariat is located in the main foyer of the Eunmyung Auditorium. Onsite registration will start on Tuesday, June 3 at 3:00 pm

**Opening hours of the registration desk**
- Tuesday, June 3 15:00-18:00
- Wednesday June 4 07:00-18:00
- Thursday June 5 07:00-13:00
- Friday June 6 07:00-17:00
- Saturday June 7 07:00-13:00

**Badges**
Each delegate and registered accompanying person will receive a name badge at registration. For security reasons and for entry to all events included in registration, delegates are requested to wear or bring their badge during all the congress activities.

**Disclaimer**
ISSLS, its Organizing Committee and Professional Meeting Consultants, and the Fairmont Scottsdale Princess accept no liability for any injuries/losses incurred by participants and/or accompanying persons, nor loss of, or damage to, any luggage and/or personal belongings. Delegates are advised to take out their own insurance to cover personal possessions, travel and cancellation as the Congress does not cover individuals against cancellation of bookings, theft or damage to belongings.
## ISSLS 2014 Shuttle Bus Timetable June 3-5

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<td>13:00 19:00 (round trip)</td>
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### ISSLS 2014 Shuttle Bus Timetable June 6-7

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TUESDAY JUNE 3

08:00  Membership Committee Meeting  
       Location: Grand Hilton Hotel, Executive Room Lounge

09:30  Strategy Group Meeting  
       Location: Central administration Building, 6th floor, Professor conference room, Severance Hospital

12:00  Executive Committee – Lunch  
       Location: Central administration Building, 6th floor, Professor conference room, Severance Hospital

15:00  Registration

18:00  Opening Ceremony & Welcome Reception  
       Location: Official President’s Residence at the Yonsei University

WEDNESDAY JUNE 4

07.45-07.50  Welcome – Program Chairman – David Wong

07.50-8.00  Welcome - Local Host - Hwan Mo Lee

SESSION #1  TOPIC: HERNIATED DISC  
            Moderators: Jeremy Fairbank and Tom Oxland

08.00-08.05  1. Surgical versus Non-Operative Treatment for Lumbar Disc Herniation: Eight-Year Results for the Spine Patient Outcomes Research Trial (SPORT)  
              Lurie JD, Tosteson TD, Tosteson ANA, Zhao W, Morgan TS, Abdu WA, Herkowitz H, Weinstein JN; USA

08.07-08.12  2. Body Mass Index and its Association with Lumbar Disc Herniation and Sciatica: a Large-Scale, Population-Based Study  
              Samartzis D, Karppinen J, Luk KDK, Cheung KMC; China, Finland

08.14-08.19  3. Defining disc herniation: is clinical diagnosis enough?  
              Battié MC, Gibbons L, Bruno-Brayda M, Fairbank JC, Heywood C, Lazary A, McCa1l II, Roberts S, Varga PP; Canada, Finland, UK, Hungary, Italy, USA

08.21-08.30  Discussion

08.30-08.35  4. How healthy discs herniate: a biomechanical and microstructural study investigating the combined effects of compression rate and flexion  
              Wade KR, Robertson PA, Thambyah A, Broom ND; New Zealand
<table>
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<th>Presentation</th>
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<tr>
<td>08.37-08.42</td>
<td>5. The significance of cartilage endplate within a lumbar disc herniation</td>
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<td><em>Lama P, Zehra U, Balkovec C, Harding IJ, Dolan P, Adams MA, UK</em></td>
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<td>08.44-08.49</td>
<td>6. Spontaneous resorption of lumbar disc herniation is less likely when Modic changes are present</td>
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<td><em>Shan Z, Fan S, Xie Q, Suyou L, Liu J, Wang C, Zhao F; Zhejiang, China</em></td>
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<td>08.51-09.00</td>
<td>Discussion</td>
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<td>09.00-09.05</td>
<td>7. Accelerated DDD in young adults is associated with polymorphisms in MMP 7, CALM 1 and Cox 2 genes</td>
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<td><em>Rajasekaran S, Kanna RM, Cheung K, Chan D, Kao P, Yee A, Raveendran M, Senthil N; Pokfulam, Hong Kong, India</em></td>
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<td>09.07-09.12</td>
<td>8. Characterization of annulus layer deformations in an intact intervertebral disc under mechanical compression</td>
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<td><em>Han SK, Tang QG, Kim HC, Chen Y, Hsieh AH; USA</em></td>
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<td>09.14-09.19</td>
<td>9. Early pattern and longitudinal evolution of degenerative changes in individual components of intervertebral discs in stressed and non-stressed segments of lumbar spine: an in-vivo MR imaging study</td>
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<td><em>Sharma A, Lancaster S, Bagade S, Hildebolt C; USA</em></td>
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<td>09.21-09.30</td>
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<td>10. Comparisons of the Effects of Time to Surgery in the Spine Patient Outcomes Research Trials for Lumbar Disc Herniation (IDH), Spinal Stenosis (SpS), and Degenerative Spondylolisthesis (DS)</td>
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<td><em>Tosteson TD, Lurie JD, Zhao W, Blood E, Spratt K, Tosteson ANA, Weinstein JN; USA</em></td>
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<td>09.37-09.42</td>
<td>11. Improvement of global sagittal alignment after lumbar decompression without fusion – analysis of 88 cases</td>
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<td>09.44-09.49</td>
<td>12. TOEI STUDY - Sagittal Spinal Alignment Versus Health-Related Quality of Life in High Age Volunteers</td>
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<td><em>Togawa D, Yamato Y, Yasuda T, Watanabe Y, Ide K, Yamada T, Kobayashi S, Arima H, Banno T, Hasegawa T, Hoshino H, Matsuyama Y; Japan</em></td>
</tr>
</tbody>
</table>
13. Predictable Factors of Deep Vein Thrombosis in Patients Undergoing Spine Surgery
   Ikeda T, Miyamoto H, Hashimoto K, Akagi M; Japan

14. Post-surgical rehabilitation patients have similar fear avoidance behaviour levels as those in non-operative care.
   Gregg C, McIntosh G, Hall H, Hoffman C, Carter T; New Zealand, Canada

15. The Re-operation Rate in a Single Dataset Varies Significantly Depending on the Definitions Applied
   Ohnmeiss DD, Baker R, Guyer RD, Blumenthal SL, Zigler JE; USA


17. Proximal Junctional Failure in Adult Deformity Patients Results in Higher Rate of Revision but Limited Impact on Clinical Outcome

18. TLIF surgery results in slightly higher risk of neurogenic leg pain 2 years after surgery compared to standard instrumented posterolateral fusion. Results from a randomized clinical trial
   Høy K, Grycel B, Andersen T, Niederman B, Helmig P, Stender Hansen E, Li H, Bünger C; Denmark

19. Lumbar fusion surgery for degenerative disc disease is associated with significantly higher rates of failed back surgery syndrome development when compared to fusion for spondylolisthesis in worker’s compensation subjects
   Anderson JT, Duff RJ, Ahn UM, Ahn NU; USA

11.28.11.40 Discussion
11.40-12.00  INVITED LECTURE #1
Moderator: Hwan-Mo Lee
North Korea through the eyes of medicine
Dr. John Linton, Severance Hospital, Korea

12.00-12.10  Discussion

12.10-13.30  LUNCH

SESSION #4  TOPIC: OUTCOMES / COST EFFECTIVENESS
Moderators: Howard An and Ho-Joong Kim

Tosteson ANA, Tosteson TD, Lurie JD, Zhao W, Blood E, Grove MR, Abdu WA, Weinstein JN; USA

13.37-13.42  21 Transforaminal lumbar interbody fusion vs. posterolateral instrumented fusion - Cost-utility evaluation alongside an RCT with 2-years of follow-up
Høy K, Christensen A, Andersen T, Bünger C, Helmig P, Hansen ES, Søgaard R; Denmark

13.44-13.49  22 Trends in the use of Bone Morphogenetic Protein among patients undergoing fusion for degenerative diagnoses in the United States, 2002-2011
Martin BI, Lurie JD, Deyo RA, Tosteson ANA, Farrokhi F, Mirza SK; USA

13.51-14.00  Discussion

14.00-14.05  23 Cost-effectiveness of Specialty Care vs Spine Strengthening for Chronic Spinal Pain

14.07-14.12  24 Defining clinically-relevant values for developmental spinal stenosis: a large scale MRI study
Cheung JPY, Samartzis D, Shigematsu H, Cheung KMC; China, Japan

14.14-14.19  25 Patient-rated outcome of spinal fusion in geriatric patients (> 80 years of age) with lumbar degenerative spondylolisthesis: Does age matter?
Marbacher S, Mannion AF, Burkhardt JK, Schär R, Porchet F, Kleinstück FS, Jeszenszky D, Fekete TF, Haschtmann D; Switzerland

14.21-14.30  Discussion
### SESSION # 5  
**TOPIC: DEGENERATIVE CHANGES**  
Moderators: Ashish Diwan and Yong Hai

<table>
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<th>Time</th>
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| 14.30-14.35 | The correlation of osteoporotic vertebral fracture with spinopelvic sagittal alignment  
  *Choi YS, Kim D, Kim M; Korea* |
| 14.37-14.42 | Decreasing Disc Height Affects Lumbar Segmental Lordosis in the Aging Lumbar Spine  
  *Nojiri H, MD, Espinoza Orias AA, Fogg L, Andersson GBJ, An HS, Inoue N; USA* |
| 14.44-14.49 | Can pro-inflammatory cytokine gene expression explain multifidus muscle fiber changes after an intervertebral disc lesion?  
  *Hodges PW, James G, Blomster L, Hall L, Schmid A, Shu C, Little C, Melrose J; Australia* |
| 14.51-15.00 | Discussion |
| 15.00-15.05 | Leptin and the Intervertebral Disc: A Pro-Inflammatory Environment May Potentiate the Biochemical Effects of Obesity  
  *Segar A, Edwards K, Fairbank F, Urban J; UK* |
| 15.07-15.12 | Evaluation of cartilage endplate biochemical composition with ultrashort echo time (UTE) MRI  
  *Fields AJ, Han M, Krug R, Lotz JC; USA* |
| 15.14-15.19 | A Phase III, Multicenter, Double-blind, Randomized, Placebo-controlled, Study of Condoliase for the Treatment of Patients with Lumbar Disc Herniation  
  *Chiba K, Matsuyama Y, Toyama Y and the Japanese SI-6603 Study Group; Japan* |
| 15.21-15.30 | Discussion |
| 15.30-16.00 | COFFEE |

### SESSION #6  
**TOPIC: DISC DEGENERATION**  
Moderators: Jeong-Beom Park and Jill Urban

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<th>Time</th>
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| 16.00-16.05 | Physical Limitations to Tissue Engineering of Intervertebral Disc Cells Using Growth Factors. Effect of Bone Morphogenetic Proten (BMP)-7 and Fibroblast Growth Factor (FGF)-2 on Glycosaminoglycan Production and Cell Metabolism  
  *Kobayashi S, Takeno K; Japan* |
| 16.07-16.12 | Diffusion properties of Human Annulus Fibrosus  
  *Naresh-Babu J ReshmaBegum SK, Neelima G, AdinarayanaRao M, SivaLeela V; India* |
The Effect of Capacitively Coupled (CC) Electrical Stimulation on Human Intervertebral Disc Cells and the Relationship between CC and BMP
Wang Z, Hutton WC, Yoon ST; USA

Lumbar disc degeneration progression in young adults in their 20’s
Makino H, Kawaguchi Y, Nakano M, Yasuda T, Seki S, Kimura T; Japan

Discussion

SYMPOSIUM 1: Registries or RCTs-Which Approach is "Best" for Answering our Clinical Questions?
Moderator: Peter Robertson

Perspective: Registries - Wilco Jacobs, The Netherlands
Perspective: RCTs - Peter Fritzell, Sweden
Lessons Learned from SPORT - Jon Lurie, USA
Role of ICHOM in Outcomes Research – Jeremy Fairbank, UK
What does it all mean to the researcher? - Anne Mannion, Switzerland

Discussion

FIRST BUSINESS MEETING

SPECIAL EMPHASIS POSTER SESSION #1

SESSION # 7
07.45-08.45

SESSION # 8
09.00-09.05 36 Healing of the bone-bone interface in lumbar intervertebral disc allograft transplantation in a goat model
Huang Y-C, Xiao J, Lu WW, Leung VYL, Luk KDK; China

09.07-09.12 37 Endplate Compressive and Permeability Properties are Altered by Degeneration and Disc Location
DeLucca JF, Cortes DH, Jacobs NT, Duncan RL, Elliott DM; USA

09.14-09.19 38 Vertebral endplate porosity reflects mechanical loading in old and degenerated discs
Zehra U, Robson-Brown K, Adams MA, Dolan P; UK
Do macroscopic and microscopic assessments of intervertebral disc degeneration reflect changes in disc function? **Zehra U, Noel-Barker N, Marshall J, Adams MA, Dolan P; UK**

Lumbar Disc and Facet Joint Degeneration: A longitudinal in vivo study **Nojiri H, Espinoza Orìas AA, Fogg L, Andersson GBJ, An HS, Inoue N; USA**

Effect of anti-bFGF neutralizing antibody on neuropathic pain induced by spinal nerve ligation in rats **Fujimaki H, Inoue G, Uchida K, Sekiguchi H, Ueno M, Saito W, Takahira N, Takaso M; Japan**

Where Do Smokers Hurt? A Comprehensive Body-Wide Analysis of Pain Reveals Smoking is Most Associated with Back Pain. **Smuck M, Thomkins-Lane C, Kao M-C; USA**

Workaholism as a risk factor for depression and disabling back pain among Japanese workers **Matsudaira K, Sawada T, Kikuchi N, Sato E, Suzuki M; Japan**

Limits of high field MRI for the detection of intervertebral disc lesions – a comparison between 11.7 T and 3 T **Berger-Roscher N, Galbusera F, Rasche V, Wilke H-J; Germany, Italy**

HARRY FARFAN PRESIDENTIAL LECTURE
Introduction – Jeremy Fairbank

**Guest Speaker** – Irene Tracey, MA (Oxon), D.Phil (PhD), FRCA Nuffield Department of Clinical Neurosciences

Title: How Advanced Neuroimaging Studies of Pain and Analgesia in Humans Informs Clinical Practice

PRESIDENTIAL ADDRESS – JEREMY FAIRBANK
Introduction – Tom Oxland

AFTERNOON OUTING
### SESSION #10  TOPIC: OUTCOMES
Moderators: Markus Melloh and S Rajasekaran

<table>
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<th>Time</th>
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<tr>
<td>07.30-07.35</td>
<td>45 Long-Term Results of Total Lumbar Disc Replacement: A Prospective Analysis with 5-10 Year Follow-Up&lt;br&gt;&lt;i&gt;Siepe CJ, Wiechert K, Heider F, Korge A, Mehren C, Mayer HM; Germany&lt;/i&gt;</td>
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<td>07.37-07.42</td>
<td>46 Single level lumbar fusion in worker’s compensation subjects for degenerative disc disease is associated with lower return to work rates compared to fusion for spondylolisthesis&lt;br&gt;&lt;i&gt;Anderson JT, Duff RJ, Ahn UM, Ahn NU; USA&lt;/i&gt;</td>
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<tr>
<td>07.44-07.49</td>
<td>47 Universal No Fault Compensation is associated with Improved Return to Work Rates in Spine Fusion&lt;br&gt;&lt;i&gt;Manson JF, Montgomery AS, Cunningham JE, Landham PR, Don AS, Robertson PA; New Zealand&lt;/i&gt;</td>
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<td>07.51-07.56</td>
<td>48 The association between morphological stenosis grade and the outcome of surgery for lumbar spinal stenosis&lt;br&gt;&lt;i&gt;Mannion AF, Fekete T, Luca A, Schizas C; Switzerland&lt;/i&gt;</td>
</tr>
<tr>
<td>07.58-08.03</td>
<td>49 Preoperative Pain Pattern Predicts Surgical Outcome more than Type of Surgery in Patients with Central Spinal Stenosis without Concomitant Spondylolisthesis&lt;br&gt;&lt;i&gt;Sigmundsson FG, Jönsson B, Strömqvist B; Sweden&lt;/i&gt;</td>
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**Discussion**

### SESSION #11  TOPIC: ANALYSIS OF PHYSIOLOGY AND PSYCHOLOGY
Moderators: David Hall and Shinichi Konno

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<td>08.22-08.27</td>
<td>50 Use of lumbar discography is associated with significantly lower return to work rates after lumbar fusion in worker’s compensation subjects&lt;br&gt;&lt;i&gt;Anderson JT, Duff RJ, Ahn UM, Ahn NU; USA&lt;/i&gt;</td>
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<tr>
<td>08.36-08.41</td>
<td>52 Discography and axially loaded MRI in the provocation of discogenic pain - a comparative pilot study&lt;br&gt;&lt;i&gt;Hebelka H, Hansson T; Sweden&lt;/i&gt;</td>
</tr>
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</table>
08.43-08.48  53 Analysis of vascular patterns for the posterior elements of the lower lumbar spine

**Tezuka F, Sakai T, Nishisho T, Takata Y, Goda Y, Higashino K, Takao S, Harada M, Sairyo K; Japan**

08.50-09.02  Discussion

**SESSION #12**
09.10-09.40  GENERAL POSTER SESSION, ODD NUMBERS

**SESSION #13**
09.40-10.10  GENERAL POSTER SESSION, EVEN NUMBERS

10.10-10.40  COFFEE

**SESSION #14**
FELLOWSHIP AWARD CEREMONY

Moderator: Tom Oxland

10.40-11.00  Introduction of Fellowships – Michelle Battie

Announcement MacNab/LaRocca Fellowship for 2014
MacNab LaRocca Fellowship Report 2013
Recipient – International Disc Degeneration Consortium: Dino Samartzis et al

Announcement of Globus Fellowship for 2014
Globus Fellowship Report 2013 Recipient - Tie Liu, China

**Presentation of Spine Young Investigators Award**

Titles: In vivo MRI measurement of spinal cord displacement in the thoracolumbar region of asymptomatic subjects: Part 1 - straight leg raise test.

In vivo MRI measurement of spinal cord displacement in the thoracolumbar region of asymptomatic subjects: Part 2 - comparison between unilateral and bilateral straight leg raise tests

**Marinko Rade, Kuopio, Finland**

**SESSION #15**
THE ISSLS PRIZE PAPERS

Sponsored by DePuy Synthes Spine

11.00-11.10  Introduction and Award Ceremony - Dr Gunnar Andersson

11.10-11.20  54 ISSLS PRIZE – CLINICAL

Long-term follow up suggests spinal fusion is associated with increased adjacent segment disc degeneration but without influence on clinical outcome. Results of a combined follow-up from 4 RCTs

**Mannion AF, Leivseth G, Brox J-I, Fritzell P, Hägg O, Fairbank JCT; Switzerland, Norway, Sweden, UK**
11.20-11.30  Discussion

11.30-11.40  55 **ISSLS PRIZE – BIOMECHANICS**
Mechanical influences in progressive intervertebral disc degeneration

*Stefanakis M, Luo J, Pollintine P, Dolan P, Adams MA; UK, Cyprus*

11.40-11.50  Discussion

11.50-12.00  56 **ISSLS PRIZE – BIOLOGY**
Increased Innervation and Sensory Nervous System Plasticity in a Mouse Model of Low Back Pain due to Intervertebral Disc Degeneration

*Miyagi M, MD, Millecamps M, Danco AT, Ohtori S, Takahashi K, Stone LS; Canada, Japan*

12.00-12.10  Discussion

12.10-13.30  LUNCH

**SESSION #16 TOPI**C: PHYSIOLOGY
Moderators: Margareta Nordin and Dino Samartzis

13.30-13.35  57 Correlation between biomechanical properties of annulus fibrosus and magnetic resonance findings

*Shan Z, Zhao F, Wang C, Liu J, Suyou L, Fan S; China*


*Russo F, Vadala G, Hartman RA, Bell KM, Sowa GA, Vo N, Denaro V, Kang JD; Italy, USA*

13.44-13.49  59 Does daily teriparatide enhance the healing process of osteoporotic vertebral fracture?

*Iwata A, Kanayama M, Shigenobu K, Oha F, Onda S, Tanaka M, Hashimoto T, Iwasaki N; Japan*

13.51-14.00  Discussion

14.00-14.05  60 Usefulness of “One Stretch”, a simple, daily, standing back extension exercise, for the prevention of onset or aggravation of low back pain in care workers

*Suzuki M, Matsudaira K, Sawada T, Sato E, Isomura T; Japan*

14.07-14.12  61 Persistent Racial and Economic Disparities in Physical Therapy Referral for Low back Pain Patients in Primary Care

*Smuck M, Zheng P, Karayannis N, Kao M-C; USA*
<table>
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<th>Time</th>
<th>Session/Event</th>
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| 14.14-14.19| Assessment of Neuroforaminal Area of the Lumbar Spine During Flexion-Extension Motion  
*Havey R, Muriuki M, Carandang G, Voronov L, Patwardhan A; USA* |
| 14.21-14.30| Discussion                                                                    |
|           | **INVITED LECTURE #2**                                                         |
|           | **Moderator:** Sally Roberts                                                    |
| 14.30-14.50| Disc Mechano-Biology                                                          |
|           | *Cornelia Neidlinger-Wilke, Germany*                                          |
| 14.50-15.00| Discussion                                                                    |
|           | **SESSION # 17**                                                              |
|           | **TOPIC: QUALITY OF LIFE AND INFECTION**                                     |
|           | **Moderators:** Richard Guyer and Kotaro Nishida                              |
| 15.00-15.05| HRQoL Scores and Radiographic Parameters Do Not Drive Patient Satisfaction after Adult Spinal Deformity Surgery  
| 15.07-15.12| Surgical Indication in Degenerative Lumbar Spinal Disease Based on Health Related Quality of Life: Multi-Center Prospective Outcome Based Analysis  
| 15.14-15.19| Ultrasonic waves remove a bacterial biofilm on implant surface and prevent the implant-associated infection  
| 15.21-15.30| Discussion                                                                    |
| 16.00-16.05| **SESSION #18**                                                               |
|           | **TOPIC: IMAGING**                                                            |
|           | **Moderators:** Matthew Smuck and                                              |
| 16.07-16.12| Prediction of future first-time low back pain based on baseline MRI findings  
*Samartzis D, Karppinen J, Luk KDK, Cheung KMC; China, Finland* |
MRI features of the psoas muscles in patients with paraspinal muscle atrophy

Kita T, Takayama K, Nakamura H, Kanematsu F, Yasunami, T Ikeda S, Yamamoto K, Ueyama H, Hori Y, Sakonaka H, Yamano Y; Japan

Comprehensive Analysis of MRI-phenotypes Provides New Insights into Lumbar Disc Degeneration for Genetic Studies

Li Y, Samartzis D, Campbell D, Cheung KMC, Luk KDK, Karppinen J, Cheah K, Chan D, Sham P; China, Finland

Symposium #2: Should we be treating our patients with antibiotics for Modic I changes and chronic low back pain?
Moderator: David Wong

Basic Science/MR Imaging of Modic Changes – Yue Wang, China

Clinical Perspective: Evidence/Pro’s and Con’s of Modic I Antibiotic Treatment: Jeremy Fairbank, UK

Discussion

Second Business Meeting

ISSLS Banquet

Surgical interspinous implant versus conventional decompression for lumbar spinal stenosis - a randomized controlled trial

Moojen WA, Arts MP, Jacobs WCH, van Zwet EW, van den Akker-van Marle ME, Koes BW, Vleggeert-Lankamp CLAM, Peul WC; The Netherlands
09.39-09.44  71  Surgical versus Non-Operative Treatment for Lumbar Spinal Stenosis
   Lurie JD, Tostenson TD, Tosteson ANA, Zhao W, Morgan TS, Abdu WA, Herkowitz H, Weinstein JN; USA

09.46-09.51  72  What leads to surgical decision in degenerative lumbar stenosis in the
   preference-based, shared decision?
   Kim H-J, Park J-Y, Kan K-T, Chang B-S, Le C-K, Yeom JS; South Korea

09.53-09.58  73  Clinical depression: a predictor of poor return to work rates among
   worker’s compensation subjects following lumbar fusion
   Anderson JT, Duff RJ, Ahn UM, Ahn NU; USA

10.00-10.12  74  Discussion

10.12-10.40  75  COFFEE

10.40-11.00  76  INVITED LECTURE #3
   Moderator: David Wong

   Status of disc arthroplasty - Richard Guyer, USA

11.00-11.10  77  Discussion

SESSION #21  TOPIC: SURGICAL FACTORS
   Moderators: Wilco Jacobs and Keith DK Luk

11.10-11.15  78  The assessment of patient-rated outcome in spinal stenosis: could
   less be more?
   Mannion AF, Fekete T, Kleinstück F, Jeszenszky D, Wertli M,
   Porchet F in collaboration with the Lumbar Stenosis Outcome Study
   (LSOS) group; Switzerland

11.17-11.22  79  Surgical Outcome of Lumbar Spinal Stenosis: 10 years prospective
   follow-up
   Tuomainen I, Aalto T, Vanhanen S, Pakarinen M, Sinikallio S,
   Leinonen V, Herno A, Kröger H, Turunen V, Savolainen S, Miettinen
   H, Airaksinen O; Finland

11.24-11.29  80  Relationship between lumbar spinal stenosis and psychosocial
   factors - A multicenter cross-sectional study (DISTO-project)
   Sekiguchi M, Yonemoto K, Kakuma T, Nikaido T, Watanabe K,
   Kato K, Otani K, Yabuki S, Kikuchi S, Konno S; Japan

11.31-11.36  81  Age Associated Relative Risk Increase for In-Hospital Mortality
   and Complications Following Lumbar Spine Surgery
   Hassanzadeh H, Nandyala SV, Marquez-Lara A, Singh K; USA
11.38-11.50  Discussion

SESSION # 22  TOPIC: SPONDYLOLISTHESIS AND STENOSIS
Moderators: Kazuhiro Hasegawa and Jon Lurie

11.50-11.55  78  Lumbar degenerative spondylolisthesis is not always unstable - a clinico-biomechanical evidence
Hasegawa K, Kitahara K, Shimoda H, Ishii K, Homma T; Japan

11.57-12.02  79  Surgical versus Non-Operative Treatment for Lumbar Degenerative Spondylolisthesis: Eight-Year Results of the Spine Patient Outcomes Research Trial (SPORT)
Lurie JD, Tosteson TD, Tosteson ANA, Zhao W, Morgan TS, Abdu WA, Herkowitz H, Weinstein JN; USA

12.04-12.09  80  Linking Parity, History of Abdominal Surgery, and Trunk Muscle Function to Degenerative Spondylolisthesis in Older Women
Cholewicki J, Lee A, Popovich Jr. JM, Mysliwiec LW, Winkelpleck MD, Flood JN, Pathak PK, Kaaikala, KH, Reeves NP, Kothe R; USA, Germany

12.11-12.16  81  Clinical Outcome of Decompressive Surgery for Lumbar Epidural Lipomatosis
Haschtmann D, Ferlic P, Kleinstück FS, Porchet F, Mannion A, Jeszenszky D, Fekete TF; Switzerland

12.18-12.30  Discussion

12.30-12.40  ANNOUNCEMENT - BEST PAPER AND POSTER AWARDS
Moderator: David Wong

Closing Remarks – Robert Gunzburg
A. HERNIATED DISC / STENOSIS
Moderators: Chang-Hoon Jeon and Christoph Siepe

SP1 Reoperation Rate After Microdiscectomy for the Treatment of Lumbar Disc Herniation: Long-term Follow-up After an Average of 10.8 Years
_ Aichmair A, Du JY, Shue J, Evangelisti G, Sama AA, Hughes AP, Lebl DR, Cammisa FP, Girardi FP; USA, Italy_

SP2 Analysis of Internet Information on the Controversial X-Stop Device
_Anderson JT, Sullivan TB, Ahn UM, Ahn NU; USA_

SP3 A Prospective Comparative Study of Two Different Minimally-Invasive Procedures for Lumbar Spinal Canal Stenosis - Unilateral Laminotomy for Bilateral Decompression (ULBD) versus Muscle-preserving Interlaminar Decompression (MILD)

SP4 Epidemiological study of Lumbar Spinal Stenosis: Six-year follow-up in the community

SP5 Night Leg Cramp and Lumbar Spinal Stenosis
_Handa J, Otani K, Nikaido T, Kikuchi S, Konno S; Japan_

SP6 Evolution of spinal canal dimensions in Switzerland. A narrowing epidemic?
_Schizas C, Schmit A, Schizas A, Becce F, Kulik G, Pierzchala K; Switzerland_
SP10  Indirect effects of decompression surgery on glycemic homeostasis in patients with type 2 diabetes mellitus and lumbar spinal stenosis: Preliminary results

SP11  Classification of chronic back muscle degeneration after spinal surgery and its relationship to low back pain

SP12  The type of metal, local antibiotics or prophylactic IV antibiotics, what influences Postoperative Spine infections with MRSA the most?
Gupta S, Maitra S, Graca M, Wetpiriyakul P, Gupta K, Durbin-Johnson B, Gupta M; USA

C. NERVE / CELL BIOLOGY I
Moderator: Jaro Karppinen and Ki-Won Kim

SP13  Dose dependent nerve inflammation of rhBMP-2 in a rodent spinal nerve model
Qiang Glen LZ, Moon Lam RW, Hu T, Toh SY, Wong H-K; Singapore

SP14  Nutrient deprivation modulates cell fate—autophagy, apoptosis, and senescence—and extracellular matrix homeostasis in intervertebral disc cells
Yurube T, Buchser WJ, Hartman RA, Pohl PPI, Lotze MT, Vo NV, Sowa GA, Kang JD; Japan and USA

SP15  Molecular Effects of Bone Morphogenetic Protein 13 on Intervertebral Disc Cells
Gulati T, Wei A, Chung S, Diwan AD; Australia

SP16  The Effect of Nervous System Activation by Pain Stimulus of Capcisin Injection to Intervertebral Disc

SP17  Up-regulation of NaV1.7 in dorsal root ganglia after intervertebral disc injury in rats

SP18  Abnormal cell metabolism in degenerated intervertebral discs: a response to focal damage and swelling?
Lama P, Le Maitre C, Dolan P, Tarlton J, Harding IJ, Adams MA; UK
D. DEFORMITY
Moderators: Serena Hu and Kazuhisa Takahashi

SP19  Stiffness after Fusion for Adult Spinal Deformity Does Not Significantly Impact Patients’ Functional Status or Satisfaction

SP20  Risk factors for floating segment degeneration in adults after long segment fusion onto the lumbar spine.
Cho W, Pawar A, Lee A, Faloon M, Cunningham M, Rawlins B, Boachie-Adjei O; USA

SP21  Sagittal spinal alignment of diffuse idiopathic skeletal hyperostosis in lumbar spinal stenosis
Yamada K, Toyoda H, Terai H, Takahashi S, Nakamura H; Japan

SP22  Relationship between spinal loads and physiological variations of the lumbar sagittal alignment: a numerical study
Galbusera F, Brayda-Bruno M, Wilke H-J; Italy, Germany

SP23  Progressive pattern of vertebral deformity in a population-based cohort study of vertebral fracture
Kato T, Akeda K, Murata K, Takegami N, Nishimura A, Kato K, Sudo A; Japan

SP24  Clinical outcome after lumbar decompression surgery was not associated with preoperative sagittal alignment

E. LOW BACK PAIN I
Moderators: Chris Colloca and Dawn Elliott

SP25  Shear modulus of the human nucleus pulposus measured using MR Elastography correlates with directly measured mechanical properties
Cortes DH, DeLucca JF, Magland JF, Wright AA, Elliott DM; USA

SP26  Biomechanical analysis of the influence of intervertebral disc degeneration on the lumbar spine
Park WM, Choi DK, Kim K, Kim YH; Korea

SP27  Escape-Avoidance coping strategy for psychosocial stress is associated with chronic low back pain in college students: a prospective cohort study
Kato K, Sekiguchi M, Nikaido T, Otoshi K, Matsuo Y, Kikuchi S, Konno S; Japan
SP28  Does the change of weather condition influence pain level of symptoms in the patients with lumbar spine diseases?

SP29  The significance of pain catastrophizing in the clinical manifestations of patients with lumbar spinal stenosis: Mediation analysis with bootstrapping
   Kim H-J, Cho C-H, Kang K-T, Chang B-S, Lee C-K, Yeom JS; South Korea

SP30  Clinical Effectiveness of Two-Level Transforaminal Epidural Steroid Injections: A Sub-Group Analysis
   Christolias GC, Singh JR; USA
F. CELL BIOLOGY II
Moderators: Scott Blumenthal and Seong-Hwan Mooon

SP31 Evaluation of the correlation among the expression of inflammatory cytokines, degeneration of the intervertebral disc, and prominent symptoms in degenerative human lumbar intervertebral discs

SP32 Tissue Engineered intervertebral disc (IVD) with either poly e-caprolactone (PCL) or poly(e-caprolactone-co-lactide (PLCL) nanofiber
Chuah YJ, Kang YJ, Tak HH; Singapore

SP33 High Glucose-induced Oxidative Stress Accelerates the Premature Stress-induced Senescence of Rat Notochordal Cells through Mitochondrial Damage
Park JB, Park E-Y; Korea

SP34 Transcriptional changes in nucleus pulposus intervertebral disc cells due to high osmolality, as revealed by cDNA microarray analysis
Mavrogonatou E, Papadopoulos V, Urban J, Kletsas D; Greece, Canada, UK

SP35 Quantitative detection of proteoglycan in intervertebral disc by iTIP gagCEST

SP36 How long should teriparatide be used to accelerate lumbar posterolateral fusion in women with postmenopausal osteoporosis?

G. LOW BACK PAIN II
Moderators: Yoshiharu Kawaguchi and Koji Otani

SP37 Biomechanical effect of the progression of lower lumbar disc degeneration on adjacent discs.
Natarajan RN, Andersson GB; USA

SP38 Efficacy of Transforaminal Epidural Steroid Injection according to Nerve Roots Enhancement
Tak HJ, Cho HK, Cho YW, Ahn SH; Korea

SP39 Influence of educational attainment and catastrophizing on pain intensity and disability in patients with lumbar spinal stenosis – mediation analysis with bootstrapping
The influence of asymptomatic stenosis on five-year results of selective decompression of only symptomatic levels for lumbar spinal stenosis

Watanabe K, Otani K, Nikaido T, Kato K, Yabuki S, Kikuchi S, Konno S; Japan

The Impact of Diabetes Mellitus in Surgical Outcomes after Lumbar Spine Surgery

Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

Comparison of Peri-operative Outcomes for Lumbar Decompression: Orthopaedic Surgery Versus Neurosurgery

Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

H. FUSION

Moderators: Kee-Yong Ha and Jeff Lotz

Effect of Physiologic Loads on Cortical and Traditional Pedicle Screw Fixation


The Role of BMP-2 on Postoperative Fusion and Subsidence Rates after Lateral Lumbar Interbody Fusion: A Cohort Controlled Study

Aichmair A, Lykissas MG, Kiely PD, Hughes AP, Sama AA, LeBl DR, Cammisa FP, Girardi FP; USA

The pullout strength of pedicle screws following re-direction after lateral wall breach or end-plate breach

Godă Y, Higashino K, Toki S, Suzuki D, Kobayashi T, Matsuura T, Fujimiya M, Yasui N, Hutton WC, Sairyo K; Japan and USA

Can bone mineral density affect intra-operative estimated blood loss of mini-invasive

Zhao F, He Y, Chen H, Shan Z, Suyou L, Fan S; China

Preoperative Facet Effusion Correlates with Cranial Adjacent Segment Instability

Ushiku C, Soshi S, Inoue T, Kida Y, Shinohara A, Hashimoto K, Ishizuka R, Marumo K; Japan

A randomized controlled trial of lumbar posterolateral fusion in combination with platelet-rich plasma (PRP)


I. DEGENARTIVE DISC DISEASE (DDD) / BIOMECHANICS

Moderator: Bong-Soon Chang and Gen Inoue

Change in the position of the spinal nerve relative to the spine with diffusion tensor tractography


Mechanobiology of complex loading in functional spinal units: Flexion/extension with combined torsion

Hartman RA, Ngo K, Yurube T, Schneider MJ, Debski RE, Kang JD, Sowa GA; Pittsburgh, PA, USA
SP51 Bioactive pedicle screws produced by chemical and heat treatments have improved biocompatibility and bone-bonding ability

Akeda K, Murata K, Takegami N, Matsushita T, Yamaguchi S, Kokubo T, Goto M, Matsumine A, Uchida A, Sudo A; Japan

SP52 The distribution of bone mass in the lumbar vertebrae: Are we measuring the right target?

Wang Y, Videman T, Boyd SK, Battié MC; China, Canada

SP53 Reproducible disc degeneration scale in a large animal model


SP54 A Prospective study of Correlation between clinical disability and radiological features in degenerative lumbar canal stenosis (LCS)

Rajasekaran S, Kannippan N, Kanna RM, Shetty AP; India

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SP55 Do unilateral Modic type III changes on coronal MRI indicate the symptomatic level of the foramen in patients with lumbar foraminal stenosis?

Fujiwara Y, Kotaka S, Izumi B, Manabe H; Japan

SP56 Pathognomonic radiological indicators for diagnosis of lumbosacral foraminal stenosis

Shinozaki Y, Ishii K, Takahashi Y, Nishida M, Nakashima D, Toyama Y, Matsumoto M, Ogawa J; Japan

SP57 Radiographic evaluation of the facet joint preservation and postoperative bone re-growth in microscopic bilateral decompression via a unilateral approach for degenerative lumbar disease. – Minimum five-year follow-up -

Dohzono S, Toyoda H, Terai H, Suzuki A, Yasuda H, Shinohara Y, Tamai K, Nakamura H; Japan

SP58 Endoscopic lumbar foraminotomy: Postoperative changes of foraminal parameters on magnetic resonance image

Ahn Y, Oh H-K, Lee, S-H, Kim H; Korea

SP59 CT Exposure and Energy Effects on Bone Mineral Density Estimation from Calibration Phantoms

Giambini H, Nassr A, Huddleston PM, Dragomir-Daescu D, An K-N; USA

SP60 Association between endplate signal change and Schmorl’s nodes with disc degeneration in the lumbar region and low back pain in a population-based cohort in Japan: The Wakayama Spine Study

Biomechanical evaluation of kinematic behavior and load sharing of a pedicle-based sliding rod fixation
Zhu Q, Lin Z, Huang Z, Chen J; China

Stabilization of the Lumbar Spine in various 3-D Postures by Spinal Muscle Contraction Pattern creating Compressive Follower Load
Wang T, Lim T-H; USA

The correlation between cage subsidence, bone mineral density, and clinical results in posterior lumbar interbody fusion
Oh KW, Lee J Hyep, Lee J Ho, Lee DY, Lee YS, Lee CK, Chang BS; Korea

Development and validation of a three dimensional subject specific model of lumbar vertebral fracture propagation
Giambini H, Qin X, Thoreson A, Dragomir-Daescu D, Nassr A, An K-N; USA

Kissing spine is not pathological change
Ishii K, Hasegawa K, Shimoda H, Honma T; Japan

Suppressive effect of low-density lipoprotein receptor-related protein-1 (LRP1) on Schwann cell apoptosis after sciatic nerve injury in mice
Orita S, Mantuano E, Yamauchi* K, Ohtori S, Arai S, Takahashi K, Gonias S, Campana W; Japan

Shift of the pedicle screw in the vertebra accompanied with change in the disc angle following instrumented facet fusion for degenerative lumbar spondylolisthesis
Miyashita T, Ataka H, Kato K, Tanno T; Japan

Anatomical background of “pseudosciatica” in cluneal neuralgia
Konno T, Aota Y, Kuniya H, Saito T, Kyoku N, Hayashi S, Kawada S, Itoh M; Japan

Stenosis in the lumbar spine is associated with increased hindfoot degeneration and ankle osteoarthritis: a study of 720 cadaveric specimens
Anderson JT, Boiwka AV, Bajwa N, Ahn NU; USA

Stress analysis in osteoporotic lumbar vertebra with micro-scaled beam-shell trabecular-cortical structure: A finite element analysis
Kim YH, Wu M, Kim K; South Korea

Biomechanical analysis of combined motion exercise in the lumbar spine
Park WM, Choi DK, Kim K, Kim YH, Yang JL; South Korea

Increase in trunk muscle loading with sagittal plane deformity: A finite element analysis
Kim YH, Kim K, Choi DK, Kim YJ; Korea and USA
GP13 Effect of ligature pretension in interspinous process surgery
Choi DK, Park WM, Kim YH, Kim K; South Korea

GP14 The relationship of the frontal plane trunk and pelvic motion during gait and the radiographic spinopelvic measurements of patients with a unilateral completely dislocated hip
Tsukamoto M, Morimoto T, Yoshihara T, Ueno M, Eto S, Kawano S, Kitajima M, Sonohata M, Mawatari M; Japan

GP15 Transforming Growth Factor-ß block the contribution of ADAMTS-1 to intervertebral disc degeneration through the SMAD/MAPK Pathway: A possible degeneration Reparative way?
Zheng Z Wang H, Wang J, Liu H; China

GP16 PLIF Expandable Cages Effectively Stabilize the Spine Better than TLIF Cage
Kodigudla M, Desai D, Agarwal A, Momeni N, Goel VK, Agarwal AK, Schultz C; USA and Germany

GP17 PEEK Translaminar Facet Screws Provide Long Term Stability of the Lumbar Spine after Microdiscectomy
Kodigudla M, Desai D, Agarwal A, Goel VK, Agarwal AK, Wanderley JGPV; USA and Brazil

GP18 Postural activity of the psoas major and quadratus lumborum muscles is less precisely controlled in people with recurring back pain
Park RJ, Tsao H, Cresswell AG, Hodges PW; Australia

GP19 The effects of neuromuscular electrical stimulation (NMES) on change in thickness of deep trunk muscles in patients with low back pain.
Baek SO, Cho HK, Jung GS, Son SM, Cho YW, Ahn SH; Korea

Lee, AY, Kim EH, Baek SO, Cho YW, Ahn SH; Korea

GP21 The relation between experimental pain and spinal stiffness - a pilot study
Wong A, Kawchuk G, Huang C; Canada

GP22 The importance of posterior osteoligamentous structure to lumbar spine stability: an in-vitro biomechanical investigation
Chamoli U, Korkusuz MH, Sabnis AB, Manolescu AR, Diwan AD; Australia

GP23 Infrared thermography in spatial evaluation of back muscle activity
Lasanen R, Airaksinen O, Karhu J, Töyräs J, Julkunen P; Finland

GP24 Estrogen Receptor on the Ligamentum Flavum in Degenerative Lumbar Stenosis
Oh IS, Ha K-Y; Korea

GP25 In-vitro biomechanical implications of a bilateral pars interarticularis defect: Do we need a different spinal implant?
Chen AS, Chamoli U, Diwan AD; Australia

GP26 Apoptosis and autophagy after spinal cord injury in rat
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GP27 Can in vitro biomechanics explain the degeneration of adjacent segments? - A systematic analysis.
Volkheimer D, Malakoutian M, Oxlund TR, Wilke H-J; Germany and Canada

GP28 Osteoclasts induce sensory nerve upregulation of a nociceptive neurotransmitter peptide in vitro

GP29 Single level lumbar laminectomy alters segmental biomechanical behavior without affecting adjacent segments

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GP31 Injectable Hydrogel Treatment Stabilizes Human Disc Range of Motion Under Physiologic Cyclic Loading
Showalter BL, Elliott DM, Malhotra NR; USA

GP32 Stress concentration depends on defect orientation in biaxial tension of fiber-reinforced tissue
Peloquin JM, Elliott DM; USA

GP33 Spine function before and after two weeks of soft lumbar bracing
Kawchuk G, Edgecombe T, Wong A, Funabashi M, Cojocaru A, Prasad N; Canada

GP34 Biomechanical Rationale for Variations in the Prevalence of Low Back Pain and Schmorl’s Nodes Found in Different Patterns of Multi-Level Disc Degeneration
Von Forell GA, Stephens TK, Nelson TG, Samartzis D, Bowden AE; USA and China

GP35 Do in vivo kinematic studies provide insight into the degeneration of segment adjacent to a spinal fusion? – a systematic analysis
Malakoutian M, Volkheimer D, Street J, Dvorak MFS, Wilke H-J, Oxlund TR; Canada and Germany

GP36 The Catabolic Effects of Endothelial Cell-Derived Microparticles on Intervertebral Disc Cells
Pohl PHI, Lozito T, Cuperman T, Yurube T, Ngo K, Moon HJ, Sowa G, Tuan R, Kang JD, Vo N; USA

GP37 Quantification of Wall Plank and Roll Test
Yoon C, Kim KW, Kim HC, Chung SG; Korea

GP38 Lumbar multifidus muscle preservation following lumbar interspinous implantation
Szpalski M, Fabbeck LG, Gunzburg R, Colloca CJ, McAviney J, Afifi M, Freeman BJ; Belgium, USA, Canada and Australia

GP39 Up-regulation of pain behavior and glial activity in the spinal cord after sciatic nerve compression and application of nucleus pulposus in rats
GP40 Notochordal cell-secreted factors stimulate matrix production by canine nucleus pulposus cells and bone marrow derived stromal cells
de Vries SAH, Potier E, van Doeselaar M, Mei BP, Tryfonidou MA, Ito K; Netherlands

GP41 Increased levels of nerve growth factor and brain-derived neurotrophic factor in human herniated intervertebral discs

GP42 Evaluation of pain behavior and CGRP immunoreactive sensory nerve fibers in the spinal dorsal horn after sciatic nerve compression and application of nucleus pulposus in rats.

GP43 Expression of the RANK/RANKL/OPG system in the rat intervertebral disc
Takegami N, Akeda K, Murata K, Sudo A; Japan

GP44 Association between vertebral fracture and degenerative changes in adjacent intervertebral discs
Takegami N, Akeda K, Murata K, Sudo A; Japan

GP45 Immunohistochemical analysis of hypoxia- and glucose metabolism-related factors in a rabbit lumbar artery ligation model
Murata K, Akeda K, Takegami N, Imanishi T, Sudo A; Japan

GP46 Alendronate chondroprotective effects on disc cells and articular chondrocytes in vitro: Dose-response studies
Kobayashi S, Miyazaki T; Japan

GP47 Disc herniation decreases expression of serotonin receptors in the dorsal root ganglion in a TNF-dependent manner – a gene expression analysis in a rat model of disc herniation.
Jonsson D, Finskas O, Fujioka Y, Ståhlberg A, Olmarker K; Japan and Sweden

GP48 Biological evaluation of human degenerated nucleus pulposus cells in functionalized self-assembling peptide nanofiber hydrogel scaffold
Tao H, Zhang Y, Wang C, Wang D, Zhang C, He Q, Ruan D; China

GP49 Immunohistochemical analysis of the renin-angiotensin system in the human intervertebral disc
Fujiwara T, Akeda K, Kondo T, Murata K, Takegami N, Kurata T, Sudo A; Japan

GP50 Pro-inflammatory cytokines production induced by macrophage-like THP-1 cells in intervertebral disc cells depends on the activation of mitogen-activated protein kinases
Kim JH, Park JH, Moon HJ, Kwon TH, Park YK; South Korea

GP51 Does the High-intensity zone (HIZ) of Lumbar Intervertebral Disc really Mean Annular Tear?
Zhao F, Chen H, Shan Z, Suyou L, Fan S; China

GP52 Exogenous SIRT1 inhibition of apoptosis via autophagy under low nutritional condition in human nucleus pulposus cells
Miyazaki S, Kakutani K, Maeno K, Takada T, Zhang Z, Yurube T, Hirata H, Kurakawa T, Terashima Y, Kurosaka M, Nishida K; Japan
GP53 Down-regulated miR-382 contributes to human intervertebral disc degeneration by targeting MMP-16

GP54 Simulation of degenerative and pro-inflammatory conditions for testing of cell therapy approaches in a disc organ culture system
Teixeira GQ, Goncalves R, Boldt A, Jahn C, Mollenhauer JA, Wilke H-J, Barbosa MA, Ignatius A, Neidlinger-Wilke C; Germany, Portugal and Germany

GP55 Bone Marrow Mesenchymal Stem Cells Protects Nucleus Pulposus Cells from Degeneration by Suppressing NF-.B Signaling via TGF-B1
Zou J, Cao C, Wu C, Yuan C, Shi Q, Yang H; China

GP56 In vitro assessment of the proliferative and chemotactic potential of BMP-13 on a chondrocyte cell line
Zhou F, Wei A, Diwan A; Australia

GP57 Integrin alpha5/beta1 mechanotransduction is involved with notochordal-cell disappearance in early intervertebral disc degeneration.

GP58 Elevated VEGF in degenerative intervertebral discs in rats with injured intervertebral discs of the caudal vertebrae

GP59 Is there any osteoarthritic change of facet joint at the adjacent level after lumbar fusion? With comparison of adjacent disc degeneration (using minimum 5-YR follow-up MRI)
Jeon C-H, Chung N-S, Lee H-D, Seo H-S; Korea

GP60 Does the lumbar fusion generate the adjacent end plate pathology? A comparative study with disc degeneration using minimum 5-YR follow-up MRI
Jeon C-H, Chung N-S, Seo H-S, Lee H-D; Korea

GP61 Expression of sclerostin and role of Non-canonical (PKC) signaling in the intervertebral disc cells

GP62 Differentiation of human mesenchymal stem cells into discogenic phenotype using three dimensional culture

GP63 Diffusion tensor imaging for quantitative evaluation of lumbar intervertebral disc degeneration

GP64 In vitro Lifespan of Nucleus Pulposus Chondrocytes in Different Aged Human Intervertebral Discs
GP65  Telomere length and telomerase activity of nucleus pulposus chondrocytes in different aged human intervertebral discs during long-term passage

GP66  Dichotomizing sensory nerve fibers innervating both the lumbar vertebral body and the area surrounding the iliac crest: a possible mechanism of referred lateral back pain from lumbar vertebral body

GP67  M1 macrophage exists in the degenerative disc
*Takada T, Maeno K, Kakutani K, Yurube T, Hirata H, Kurakawa T, Miyazaki S, Terashima Y, Doita M, Kurosaka M, Nishida K; Japan*

GP68  Molecular characterization of chordoma cell line U-CH1-N: Applications for intervertebral disc research
*Fujita N, Hosogane N, Ishii K, Hikata T, Watanabe K, Toyama Y, Miyamoto T, Matsumoto M; Japan*

GP69  Intracellular Calcium Signaling in Fibrous Tissues is Both Strain- and Microenvironment-Dependent
*Han WM, Heo S-J, Duncan RL, Mauck RL Elliott DM; USA*

GP70  Chemokine expression by annulus fibrosus and nucleus pulposus cells
*Chee AV, Liu DK, Shi P, Chen D, Li Z, Chen D, An HS; USA and China*

GP71  Axonal growth potential induced by interactions between IVD and DRG in response to IL-1ß
*Kim HC, Caspar TW, Shah SB, Hsieh AH; USA*

GP72  Chloroquine increases cellular apoptosis, senescence, and extracellular matrix degradation in intervertebral disc cells: possible adverse effects of autophagy inhibition
*Yurube T, Buchser WJ, Lotze MT, Vo NV, Sowa GA, Kang JD; Japan and USA*

GP73  The role of diabetes Type I in intervertebral disc degeneration
*Russo F, Pohl P, Ngo K, Yurube T, Dong Q, Fan Y, Massimo T, Sowa G, Kang J, Vo N; USA*

GP74  Removal of Adams-5 prevents tobacco smoking-induced disc aggrecan breakdown and matrix proteoglycan loss

GP75  Effects of the anti-aging agent rapamycin on disc matrix homeostasis
*Vo N, Ngo K, Yurube T, Pohl P, Dong Q, Miller R, Roughley P, Sowa G, Kang J; USA*

GP76  Neuronal Nitric Oxide Synthase inhibition attenuates intervertebral disc degeneration
*Defino HLA, Issy AC, Victor Castania V, Bell E; Brazil*

GP77  PT modifier of SRS-Schwab adult spinal deformity classification and mode of pelvic compensation
*Kobayashi T, Aono K, Jimbo S, Senoo I, Atsuta Y, Ito H; Japan*

GP78  Prolonged Expansion of Human Nucleus Pulposus Cells Expressing Human Telomerase Reverse Transcriptase Mediated by Lentiviral Vector
*Wong D, Wu JH, Ruan D, He Q, Zhang Y, Chaofeng Wang C, Xin H; Beijing, China*
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*Suh B-K, Moon S-H, Lee H-M, Kim SW, Kim T-H, Kwon YS, Park MS; Korea*

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*Park MS, Moon S-H, Kim HJ, Suh B-K, Nam JH, Lee H-M; Korea*

GP81  Enhanced bone regeneration efficiency of BMP-2 with concurrent reduction of heterotopic ossification: Evaluation of a new BMP-2 carrier in a large animal model of lumbar interbody fusion
*Wang M, Akogwu Abbah S, Tao H, Toh SY, Moon Lam RW, Goh J, Wong H-K; Singapore and Ireland*

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GP83  Effectiveness of outpatient myelography for patients with lumbar disease

GP84  Study of the factors affecting the lumbosacral flexibility
*Imuta M, Ishigaki N, Aihara T; Japan*

GP85  The total care including a prone exercise and diet therapy in low back school was effective for the improvement of the physical and the psychosocial problems in the elderly patients with chronic low back pain.
*Sato K, Sekiguchi Y; Japan*

GP86  Can be ABI in the Lumbar Spinal Stenosis Diagnosis Support Tool substituted by palpation of posterior tibial artery?- A multicenter cross-sectional study (DISTO-project)

GP87  The Prevalence and Related Factors of Lumbar Lesion in Rheumatoid Arthritis Patients
*Suzuki A, Yasuda H, Yamada K, Takahashi S, Terai H, Toyoda H, Nakamura H; Japan*

GP88  Comparison of the efficacy of spinal nerve root infiltration for lumbar foraminal stenosis and lumbar canal stenosis
*Tanno T, Ataka H, Miyashita T; Kato K; Japan*

GP89  Survival prognosis of symptomatic and asymptomatic spinal metastases by use of Tokuhashi and Tomita Scores: A retrospective analysis of 266 patients.
*Takuya K, Yoichi A, Takayuki Y, Motonori K, Takanori N, Mroz TE, Lieberman IH, Tomoyuki S; Japan and USA*

GP90  Impact of the gluteal muscles stretch on lumbar region
*Mochizuki R, Ishigaki N, Aihara T; Japan*

GP91  Does the morphology of the facet joint affect unilateral spondylolysis?
*Ishitani H, Ishigaki N, Mochizuki R, Aihara T; Japan*
GP92 Validation of a diagnostic support tool for lumbar spinal canal stenosis for osteoarthritis of the hip
Morimoto T, Tsukamoto M, Yoshihara T, Sonohata M, Mawatari M; Japan

GP93 Initial diagnosis of ruptured abdominal aortic aneurysm and ruptured infected abdominal aortic aneurysm with lumbago
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GP94 Total disc replacement in the treatment of recurrent lumbar disc herniation
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GP95 Survival prognosis in symptomatic and asymptomatic patients with spinal metastases by use of the revised Tokushahi score
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GP99 Prospective study of Superior Cluneal Nerve disorder as a possible cause of low back and leg pain
Kuniya H, Aota Y, Kawai T, Kaneko K, Konno T, Saito T; Japan

GP100 Does low back pain in patients with early-stage spondylolysis have specific characteristics?

GP101 The features of degenerative lumbar scoliosis in rheumatoid arthritis patients - matched cohort study

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GP103 Feasibility of the Nijmegen Decision Tool to support spine surgeons in the triage of Chronic Low Back Pain patients
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GP107 Early rehabilitation is effective in reducing the risk of disuse syndrome in patients with vertebral fractures as a result of osteoporosis Norimoto M, Yamashita M, Abe K, Yamashita K, Yamaoka A, Takahashi K, Ohtori S; Japan

GP108 The relation between early stage MRI fat suppression image and prognosis of acute osteoporotic vertebral compression fracture Suzuki N, Fukuoka M, Mizutani J, Otsuka S, Otsuka T; Japan

GP109 Vacuum phenomenon of sacroiliac joint: correlation with lumbo pelvic alignment Takata Y, Sakai T, Higashino K, Goda Y, Sairyo K; Japan

GP110 Diagnostic accuracy of the self-administered, self-reported history questionnaire for lumbar spinal stenosis patients—a multicenter cross-sectional study (DISTO-Project)—Kato K, Sekiguchi M, Nikaido T, Watanabe K, Yonemoto K, Kakuma T, Otani K, Yabuki S, Kikuchi S, Konno S; Japan


GP112 The relationship between rotation and tilting of vertebral body in cases with degenerative lumbar scoliosis Izumi B, Fujiwara Y, Miyauchi A, Kotaka S, Manabe H; Japan

GP113 Sagittal Spino-pelvic Alignment in Patients with Osteoarthritis of the Hip Yoshihara T, Morimoto T, Tsukamoto M, Sonohata M, Mawatari M; Japan

GP114 Coronal Spino-pelvic Alignment In Crowe Type IV Hirata H, Morimoto T, Yoshihara T, Tsukamoto M, Kawano S, Kitajima M, Sonohata M, Mawatari M; Japan

GP115 Effect of the rocker exercise on the flexibility of the leg and trunk, and on the static balance at standing Ishigaki N, Aihara T; Japan

GP116 Clinicopathologic features of lumbar disc herniation in the elderly Kawaguchi K, Tsuchiya K, Kato G; Japan

GP117 Can Brief Scale for Psychiatric Problems in Orthopaedic Patients (BS-POP) predict functional MRI findings in patients with chronic low back pain. Kaneko H, Sekiguchi M, Konno S; Japan

GP118 Trunk muscle activities at cross-legged sitting posture in comparison with at chair sitting posture Ezure T, Aihara T; Japan

GP119 CT classification and clinical significance of vacuum phenomenon for the lumbar intervertebral disc Nishida K, Maeno K, Nakamura K, Takada T, Hirata H, Kurakawa T, Miyazaki S, Yurube T, Nakanishi Y, Yano T, Yamamoto J, Iguchi T, Kurosaka M; Japan
GP120 Anti-bFGF neutralizing antibody reduces grial cell activation in dorsal horn in rats CFA-induced discitis.


GP121 Low back pain causes different level of depressive tendencies in various lumbar diseases


GP122 Clinical Course of Motor Deficits from Lumbar Radiculopathy Due to Disc Herniation: Analysis of 6 Month Outcomes

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GP123 Adolescent agonistic tennis and spinal deseases, what's the connection? Results from a cross-sectional study

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GP124 Quality of life and low back in pain in Adolescent Idiopathic Scoliosis: a cross-sectional study of 1354 patients

Zaina F, Negrini F, Rainoldi L, Negrini S; Italy

GP125 Lumbar facet joint orientation in degenerative spondylolisthesis: the role of ethnic variation in Asia Pacific


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Urushibara M, Aihara T, Hatakeyama K; Japan

GP127 Lumbar spine magnetic resonance (MR) imaging in China: appropriateness and associated factors

Wang Y, Yu D, Wang X, Lin X; China

GP128 Long-term prognosis of osteoporotic vertebral fracture - analysis of factors affecting mortality, ADL, residual back pain


GP129 Comparison of Spinous Process–Splitting Laminectomy versus Conventional Laminectomy for Lumbar Spinal Stenosis

GP130  Clinical Outcome after Lumbar Spine Surgery in Patients with Rheumatoid Arthritis
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GP131  Correlation of lateral stenosis in MRI with symptoms, walking capacity and EMG findings in patients with surgically confirmed lateral lumbar spinal canal stenosis

GP132  Is It Real Adjacent Segment Pathology by Stress Concentration after Limited Fusion in Degenerative Lumbar Scoliosis?
Ha K-Y, Kim Y-H, Ahn J-H; Korea

GP133  Bone-cement augmentation procedures for spinal pathologic fracture by multiple myeloma.

GP134  Long-term outcomes of in situ fusion for dysplastic spondylolisthesis

GP135  Prospective study of risk factors related to reoperation after microsurgical bilateral decompression via a unilateral approach (MBDU) for treatment of degenerative lumbar disease.
Kato M, Matsumura A, Namikawa T, Hayashi K, Nakamura H; Japan

GP136  Anatomy of Lamina in the Thoracolumbar Spine with the Special Reference to Translaminar Screws: CT and Cadaveric Analysis with Screw Simulation
Cho W, Le JT, Shimer AL, Werner BC, Glaser JA, Shen FH; USA

GP137  The Insertion Technique of Translaminar Screws in the Lumbar Spine: CT and Cadaveric Validation
Cho W, Le JT, Shimer AL, Werner BC, Glaser JA, Shen FH; USA

GP138  Anatomic Guideline for Approach to Lateral Lumbar Interbody Fusion (LLIF)
Cho W, Fantini GA, Castro CA, Cammisa Jr FP, Sama AA, Hughes AP, Girardi FP; USA

GP139  Deformity Correction and Maintenance by Extreme Lateral Lumbar Interbody fusion (LLIF) and Its Related Factors
Cho W, Castro CA, Cammisa Jr FP, Sama AA, Hughes AP, Huang RC, Girardi FP; USA

GP140  Clinical results of instrumented lumbar spinal surgery in elderly patients

GP141  Does site of symptoms influence the surgical results for discogenic low back pain treatment?

GP142  Biomechanical Functional Evaluation of a Novel Artificial Nucleus System for Disc Nucleus Replacement
Lee T-K, Hong J-H, Lim T-H; Korea and USA
GP143 Vertebral collapse after lumbar segmental fusion
Sasaki K, Nagano J, Nosaka U, Mizuno T, Hasegawa K; Japan

GP144 Low Back Pain Intensity in Lumbar Spinal Stenosis Measured by Using the Japanese Orthopaedic Association Score and the Visual Analogue Scale -Distribution, Responsiveness to the Surgery and Correlation Between the Two Measurements

GP145 The influence of pain sensitivity on the treatment outcome of transforaminal epidural steroid injection in patients with lumbar spinal stenosis
Kim H-J, Yeom JS, Lee JW, Chang B-S, Lee C-K; Korea

GP146 Evaluation of behavior and expression of RANKL in dorsal root ganglia after sciatic nerve compression and application of nucleus pulposus in rats.

GP147 Nucleoplasty with NuCore® Injectable Nucleus Replacement for Herniated Lumbar Disc: a Multicenter Study with a Minimum Five-Year Follow-up
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GP148 DETECTION OF SPINAL IMPLANT MATERIALS IN SCOLIOSIS PATIENTS WITH LONG-TERM FOLLOW UP: A QUESTIONNAIRE STUDY
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GP149 Risk factors for bone non-union after lumbar interbody fusion
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GP150 Ablation of the basivertebral nerve: Pilot study results, continuous experience and long – term results of an innovative treatment of back pain
Becker S; Austria

GP151 Prognostic factors of surgical outcome after spinous process-splitting laminectomy for lumbar spinal stenosis
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GP152 Effects of lordotic angle of a cage on sagittal alignment and clinical outcome in one level posterior lumbar interbody fusion with pedicle screw fixation

GP153 Is discectomy with lumbar disc herniation effective in degenerative lumbar spondylolisthesis?
Aihara T, Hatakeyama K, Urushibara M, Ouchi J; Japan

GP154 Risk factor analysis of adjacent segment degeneration after single-level lumbar fusion
Sasaki K, Nagano J, Nosaka U, Mizuno T, Hasegawa K; Japan

GP155 Immunohistochemical analysis of the radiolucent zone around pedicle screws after spinal fusion surgery
Akeda K, Murata K, Takegami N, Sudo A; Japan
GP156  Evaluation of the effect of parathyroid hormone treatment on changes in pedicle screw fixity by computed tomography-based finite element analysis


GP157  Two-year follow up outcomes of Dynamization-PLIF for Destructive spondyloarthropathy

“Is Dynamization-PLIF for DSA useful method to reduce the risk of instrumentation failure?”

Okamoto N, Kunogi J, Kawamura N, Masuyama S, Masuda K, Hirao Y, Fujii K; Japan

GP158  Clinical outcomes of endoscope-assisted spinal decompression surgery for degenerative lumbar spondylolisthesis with spinal instability


GP159  Incidental durotomy in posterior lumbar surgery and its prevention using the yellow ligament floating method

Yamazaki T, Haru N, Terayama S, Hayakawa K; Japan

GP160  Effect of Cervical Laminoplasty on Lower Back Pain

Hirao Y, Takeshita K, Oka H, Oshima Y, Ono T, Ohya J, Soma K, Chikuda H; Japan

GP161  Patient Characteristics Affecting Discharge Disposition After Lumbar Fusion

Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP162  Effect of Hypertension in Surgical Outcomes after Lumbar Spine Surgery

Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP163  Clinical depression is associated with higher overall medical costs in worker’s compensation subjects at 3 years after single level lumbar fusion surgery

Anderson JT, Duff RJ, Ahn UM, Ahn NU; USA

GP164  Two-year results of X-STOP interspinous implants in the Japanese populations with lumbar spinal stenosis


GP165  Crowned dens syndrome after Lumbar spinal surgery


GP166  Adjacent Segment Pathology After Single Level Minimally Invasive Transforaminal Lumbar Interbody Fusion with Percutaneous Screw Instrumentation A minimum three Years Follow-up

Kim MC, Park JW, Kim WC, Lee HS, Kim DK, Chung HT; Korea

GP167  The influence of spinal sagittal balance on clinical outcomes after microendoscopic laminotomy for patients with lumbar spinal canal stenosis.

Dohzono S, Toyoda H, Terai H, Suzuki A, Yasuda H, Shinohara Y, Tamai K, Nakamura H; Japan

GP168  Evaluation of low dose rhBMP-2 and bone-marrow derived mesenchymal stem cells in posterolateral spinal fusion-Differences with and without osteogenic differentiation

GP169  Fusion performance of bone marrow-derived mesenchymal stem cell and low dose recombinant human bone morphogenetic protein 2 delivered by polyelectrolyte complex microbeads in a porcine anterior lumbar interbody fusion model

GP170  Comparison of radiological and clinical results of balloon kyphoplasty according to anterior height loss in the osteoporotic vertebral fracture

GP171  MRI evaluation of dural sac enlargement by interspinous spacers (X-STOP): Does limiting the spinal extension change the global sagittal alignment?
Akazawa T, Kotani T, Sakuma T, Nemoto T, Nawata K, Yamazaki A, Minami S, Ohtori S, Takahashi H; Japan

GP172  The clinical outcomes and features after microendoscopic laminotomy for elder patients with lumbar spinal stenosis.
Yasuda H, Toyoda H, Dohzono S, Matsumoto T, Terai H, Suzuki A, Shinohara K, Tamai K, Nakamura H; Japan

GP173  Spinal osteotomy and correction using SUK DVR system for adult sagittal plane deformity
Kanayama M, Ikawa M, Hashimoto T, Shigenobu K, Oha F, Iwata A, Onda S, Tanaka M, Tsunekawa H, Japan

GP174  Comparison of Peri-Operative Outcomes of Lumbar Fusion: Orthopaedic Surgery versus Neurosurgery
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP175  Impact of Resident Involvement on Complications Following Lumbar Decompression Surgery
Marquez-Lara A, Nandyala SV, Fineberg SJ, Haughom BD, Singh K; USA

GP176  Incidence, Predictors and Outcomes of Pneumonia after Lumbar Spine Surgery
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP177  Incidence, Predictors and Outcomes of Pulmonary Embolism after Lumbar Spine Surgery
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP178  Outcomes after Lumbar Decompression or Fusion in patients with an Elevated White Blood Cell Count (>10K)
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP179  Outcomes after Lumbar Spine Surgery in Patients with an Elevated Creatinine
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP180  Outcomes after Lumbar Spine Surgery in Patients with Preoperative Anemia
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP181  Outcomes after Single-Level Lumbar Decompression or Fusion in Patients with Hypertension
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA

GP182  Risk Factors Associated with Surgical Site Infections Following Lumbar Spine Surgery for Degenerative Pathologies
Marquez-Lara A, Nandyala SV, Fineberg SJ, Singh K; USA
GP183 Sentinel Events in Lumbar Spine Surgery
*Marquez-Lara A,* *Nandyala SV,* *Hassanzadeh H,* *Singh K; USA*

GP184 Perioperative complications of lumbar spine surgery in patients over 85 years.
*Onda S,* *Kanayama M,* *Hashimoto T,* *Shigenobu K,* *Ooha F,* *Iwata A,* *Tanaka M,* *Kaneko K; Japan*

GP185 Surgical debridement with retention of spinal instrumentation and long-term antimicrobial therapy for multidrug resistant surgical site infections after spinal surgery: A case series
*Miyazaki S,* *Kikutani K,* *Maeno K,* *Takada T,* *Hirata H,* *Kurakawa T,* *Terashima Y,* *Kurosaka M,* *Nishida K; Japan*

GP186 Prognostic factors in microendoscopic laminotomy for patients with lumbar spinal stenosis
*Toyoda H,* *Dohzono S,* *Matsumoto T,* *Terai H,* *Suzuki S,* *Yasuda H,* *Nakamura H; Japan*

GP187 Good clinical outcomes and fusion rate of less invasive facet fusion with a percutaneous pedicle screw system for degenerative lumbar spondylolisthesis
*Miyashita T,* *Ataka H,* *Kato K,* *Tanno T; Japan*

GP188 SSI surveillance followed by vancomycin powder prophylaxis of high-risk cases to reduce SSI rates after spinal surgery.
*Takagi K,* *Ogihara S,* *Kimio M,* *Mitsuyasu I,* *Kouji T,* *Yoshio U,* *Yoshihiko T,* *Shima H,* *Kenta M,* *Toshihito M; Japan*

GP189 Analysis of Reoperations after Microendoscopic Lumbar Decompression
*Yuzawa Y; Japan*

GP190 Can povidone-iodine solution prevent surgical site infection in spine surgery?
*Takahashi N,* *Kunogi J,* *Kawamura N,* *Masuyama S,* *Masuda K,* *Hirao Y,* *Fujii K,* *Niiutsa G,* *Okamoto N; Japan*

GP191 Entrapment of the superior cluneal nerve can cause leg pain and/or tingling mimicking lumbo-sacral spinal disorders. Repsort of 19 surgical cases.
*Aota Y,* *Kawai T,* *Kuniya H,* *Konanno T,* *Saito T; Japan*

GP192 Closed subarachnoid drainage for management of cerebrospinal fluid leakage - the efficacy of the pump-regulated lumbar subarachnoid drainage-
*Suzuki N,* *Fukuoka M,* *Mizutani J,* *Otsuka S,* *Otsuka T; Japan*

GP193 Use of Amniotic Membrane Anti-adhesion Barrier for Lumbar Discectomy
*Beihm J,* *Shellock J,* *Guyer RD,* *Ohnmeiss DD,* *Blumenthal SL,* *Zigler JE; USA*

GP194 Implementation of a Spine Surgery Quality Assurance Program in a Multi-Site Private Practice* Guyer RD,* *Baker R,* *Blumenthal SL,* *Zigler JE,* *Shivers J,* *Ohnmeiss DD,* *Verma-Kurvari S; USA*

GP195 The ideal trajectory for balloon kyphoplasty using Ray-Sum 3D imaging
*Yamazaki A,* *Kotani T,* *Akazawa T,* *Sakuma T,* *Nemoto T,* *Nawata T,* *Takahashi K,* *Minami S; Japan*

GP196 Pregnancy after Lumbar Total Disc Replacement
*Owusu A,* *Zigler JE,* *Guyer RD,* *Blumenthal SL,* *Ohnmeiss DD; USA*
GP197  Spinal alignment and low back pain after total hip replacement arthroplasty in patients with severe hip osteoarthritis
*Eguchi Y, Iida S, Suzuki C, Shinada Y, Ohtori S, Takahashi K; Japan*

GP198  Prospective cohort study of quality of life in patients with metastatic spine tumors
*Kakutani K, Sakai Y, Maeno K, Yurube T, Hirata H, Kurakawa T, Miyazaki S, Terashima Y, Takada T, Iguchi T, Kurosaka M, Nishida K; Japan*

GP199  Bowel/bladder dysfunction and numbness in the sole of the both feet in lumbar spinal stenosis - A multicenter cross-sectional study (DISTO-project)

GP200  Prospective Multicenter Surveillance and Risk Factor Analysis of Deep Surgical Site Infection after Posterior Thoracic and/or Lumbar Spinal Surgery in Adults

GP201  Lower urinary tract symptom in patients with lumbar canal stenosis who have undergone decompression surgery

GP202  Comparison of Comorbidity and Surgical Outcomes in Lumbar Fusion Surgery
*Nandyala SV, Marquez-Lara A, Hassanzadeh H, Singh K; USA*

GP203  Comparison of Comorbidity and the Relative Risk Increase for In-Hospital Mortality and Complications Following Lumbar Spine Surgery
*Nandyala SV, Marquez-Lara A, Hassanzadeh H, Singh K; USA*

GP204  Comparison of Patient Demographics and Surgical Characteristics between Age Groups in Lumbar Fusion Surgery
*Nandyala SV, Hassanzadeh H, Marquez-Lara A, Singh K; USA*

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GP206  The Influence of Timing and Context on Pain Assessment in Patients with Lumbar Spinal Stenosis
*Smuck M, Zheng PZ, Kao M-C J, Hu RW, Tomkins-Lane C; USA and Canada*

GP207  Use of the Spine AdVerse Events Severity (SAVES) System to Categorize and Report Adverse Events in Spine Surgery
*Wagner PJ, Ailon T, Zhou H, Pascal S, Harrigan MB, Stauff M, Lapinsky A, Connolly PJ, DiPaola CP; USA*

GP208  The Disc degeneration has little impact on surgical outcomes for lumbar spondylolysis.

GP209  Does the Type of Surgery Influence the Surgical Results for Metastatic Spine Disease?
GP210 Lumbar spinal canal stenosis associated with compression fracture of lower lumbar spine

GP211 Assessment of risk factor of rod fracture after posterior spinal fusion for adult spinal deformity
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GP212 Severe wound pain immediately after fusion surgery using percutaneous pedicle screw: a comparative study with wilese approach.

GP213 Relationships of pre-operative paravertebral muscle volume, fat infiltration, and lumbar lordosis with post-operative function in the patients who underwent spinal surgery for lumbar degenerative disease
Shin D-E, Ahn T-K, Kang K-C, Hong C-K; Korea

GP214 The evaluation of the pain origin of non-union osteoporotic vertebral fracture using the vertebral block procedure before the operation
Kato T, Yoshii T, Inose, H, Yamada T, Sumiya S, Oyaizu T, Hirai T, Sakai K, Okawa A; Japan

GP215 Analysis of factors affecting activity of daily life at discharge in balloon kyphoplasty patients
Shirai T, Shimizu N, Toyoda M, Fukuda N, Kotani T; Japan

GP216 Massive disc herniation: Risk factor analysis
Eun SS, Hong YS, Lee SH; Korea

GP217 MRI versus CT for the diagnosis of lumbar spinal stenosis.
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GP218 Does tranexamic acid effectively reduce bleeding after spinal fusion surgery in patients who taking low dose aspirin?
Cho K-J, Kim Y-T, Seo B-H; Korea

GP219 Posterior lumbar interbody fusion using single cage and unilateral posterolateral fusion with local bone.-Average 5 years follow up results-

GP220 Surgical outcome of posterior fusion for osteoporotic vertebral compression fracture at middle to lower lumbar spine

GP221 Efficacy of Minimally Invasive spine Stabilization for Spinal Infection
Ishihara S, Ishii K, Kaneko Y, Funao H, Fukui Y, Toyama Y, Koyanagi T, Matsumoto M; Japan

GP222 Efficacy of Ankle-Brachial Index as a Preoperative Screening in Spine Surgery
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GP237  Impact of Resident Involvement on Complications Following Lumbar Fusion Surgery
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GP238  Perioperative Outcomes of Multi-level Anterior-posterior Lumbar Fusions
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GP239  Perioperative Outcomes of Multi-level versus Single Level Lumbar Spine Surgery
Nandyala SV, Marquez-Lara A, Fineberg SJ, Singh K; USA

GP240  Risk Factors for Urinary Tract Infections Following Lumbar Spine Surgery
Nandyala SV, Marquez-Lara A, Fineberg SJ, Singh K; USA

GP241  Cost of “Zero Event” Complications: Comparison of Anterior Cervical Diskectomy and Fusion to Common Orthopaedic Procedures
Kawaguchi S, Waagmeester G, Anderson P, Arthur M, Hart R; USA

GP242  Is standalone lateral interbody fusion safe for multilevel adult degenerative spinal stenosis?
Grewal K, Deviren V, Pekmezci M, Sheffrey L; USA

GP243  Four rods prevent rod breakage and pseudarthrosis in pedicle subtraction osteotomies.
Gupta S, Sakir Eski M, Durbin-Johnson B, Ames C, VDeviren V, Gupta M; USA

GP244  Nucleous Pulposus Tissue Engineering Using A Novel Photopolymerizable Hydrogel and Minimally Invasive Delivery
Henrikson KJ, Pohl PHI, Lin H, Hartman RA, Tuan RS, Kang JD, Vo N, Sowa G; USA

GP245  Diagnostic and therapeutic effect of analgesic discogram with steroid and lidocaine injection
Kim Jin H, Kim Jung H, Song J-K; Korea

GP246  Efficacy of Topping-off Surgery in Preventing Adjacent Segment Degenerative Stenosis of the Lumbar Spine: A Radiographic and Clinical Study
Yang J, Hai Y, Chen X, Guan L, Su Q, Kang N; China

GP247  The application of Minimally invasive spine stabilization (MIST) for metastatic spinal tumors
Nakanishi K, Hasegawa T; Japan

GP248  Postoperative translation of upper instrumented vertebra is a risk factor for proximal junctional deformity in the coronal plane after posterior lumbar fusion surgery
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GP249  Complications following minimal invasive lateral interboby fusion for degenerative lumbar disease
Kim KN, Yoon DH, Ha Y, Yi S, Shin DA; Korea

GP250  Evaluation of behavior and expression of NaV1.7 in dorsal root ganglia after sciatric nerve compression and application of nucleus pulposus in rats