

Hendrik Schmidt

List of Publications by Year in descending order

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115
papers

5,140
citations

87843

38
h-index

98753

67
g-index

116
all docs

116
docs citations

116
times ranked

3116
citing authors

#	ARTICLE	IF	CITATIONS
1	Analysis of the influence of disc degeneration on the mechanical behaviour of a lumbar motion segment using the finite element method. <i>Journal of Biomechanics</i> , 2006, 39, 2484-2490.	0.9	302
2	Application of a new calibration method for a three-dimensional finite element model of a human lumbar annulus fibrosus. <i>Clinical Biomechanics</i> , 2006, 21, 337-344.	0.5	292
3	Comparison of eight published static finite element models of the intact lumbar spine: Predictive power of models improves when combined together. <i>Journal of Biomechanics</i> , 2014, 47, 1757-1766.	0.9	291
4	Application of a calibration method provides more realistic results for a finite element model of a lumbar spinal segment. <i>Clinical Biomechanics</i> , 2007, 22, 377-384.	0.5	223
5	Intradiscal Pressure, Shear Strain, and Fiber Strain in the Intervertebral Disc Under Combined Loading. <i>Spine</i> , 2007, 32, 748-755.	1.0	212
6	Stepwise reduction of functional spinal structures increase range of motion and change lordosis angle. <i>Journal of Biomechanics</i> , 2007, 40, 271-280.	0.9	200
7	Estimation of loads on human lumbar spine: A review of in vivo and computational model studies. <i>Journal of Biomechanics</i> , 2016, 49, 833-845.	0.9	160
8	The risk of disc prolapses with complex loading in different degrees of disc degeneration – A finite element analysis. <i>Clinical Biomechanics</i> , 2007, 22, 988-998.	0.5	153
9	The relation between the instantaneous center of rotation and facet joint forces – A finite element analysis. <i>Clinical Biomechanics</i> , 2008, 23, 270-278.	0.5	127
10	Finite element modeling of soft tissues: Material models, tissue interaction and challenges. <i>Clinical Biomechanics</i> , 2014, 29, 363-372.	0.5	126
11	Effect of multilevel lumbar disc arthroplasty on spine kinematics and facet joint loads in flexion and extension: a finite element analysis. <i>European Spine Journal</i> , 2012, 21, 663-674.	1.0	121
12	Geometry strongly influences the response of numerical models of the lumbar spine – A probabilistic finite element analysis. <i>Journal of Biomechanics</i> , 2012, 45, 1414-1423.	0.9	112
13	Response analysis of the lumbar spine during regular daily activities – A finite element analysis. <i>Journal of Biomechanics</i> , 2010, 43, 1849-1856.	0.9	105
14	What have we learned from finite element model studies of lumbar intervertebral discs in the past four decades?. <i>Journal of Biomechanics</i> , 2013, 46, 2342-2355.	0.9	102
15	The relation between intervertebral disc bulging and annular fiber associated strains for simple and complex loading. <i>Journal of Biomechanics</i> , 2008, 41, 1086-1094.	0.9	84
16	Stepwise reduction of functional spinal structures increase vertebral translation and intradiscal pressure. <i>Journal of Biomechanics</i> , 2007, 40, 795-803.	0.9	80
17	Activities of Everyday Life with High Spinal Loads. <i>PLoS ONE</i> , 2014, 9, e98510.	1.1	76
18	Comparison of four methods to simulate swelling in poroelastic finite element models of intervertebral discs. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2011, 4, 1234-1241.	1.5	74

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19	Comparative evaluation of six quantitative lifting tools to estimate spine loads during static activities. <i>Applied Ergonomics</i> , 2015, 48, 22-32.	1.7	73
20	Biomechanical Evaluation of a New Total Posterior-Element Replacement System. <i>Spine</i> , 2006, 31, 2790-2796.	1.0	72
21	No consensus on causality of spine postures or physical exposure and low back pain: A systematic review of systematic reviews. <i>Journal of Biomechanics</i> , 2020, 102, 109312.	0.9	70
22	Preliminary Investigations on Intradiscal Pressures during Daily Activities: An In Vivo Study Using the Merino Sheep. <i>PLoS ONE</i> , 2013, 8, e69610.	1.1	63
23	Which axial and bending stiffnesses of posterior implants are required to design a flexible lumbar stabilization system?. <i>Journal of Biomechanics</i> , 2009, 42, 48-54.	0.9	60
24	Prospective Design Delineation and Subsequent In Vitro Evaluation of a New Posterior Dynamic Stabilization System. <i>Spine</i> , 2009, 34, 255-261.	1.0	60
25	The mechanical response of the lumbar spine to different combinations of disc degenerative changes investigated using randomized poroelastic finite element models. <i>European Spine Journal</i> , 2011, 20, 563-571.	1.0	60
26	Creep associated changes in intervertebral disc bulging obtained with a laser scanning device. <i>Clinical Biomechanics</i> , 2007, 22, 737-744.	0.5	58
27	Comparison of in vivo measured loads in knee, hip and spinal implants during level walking. <i>Journal of Biomechanics</i> , 2017, 51, 128-132.	0.9	57
28	The effect of different design concepts in lumbar total disc arthroplasty on the range of motion, facet joint forces and instantaneous center of rotation of a L4-5 segment. <i>European Spine Journal</i> , 2009, 18, 1695-1705.	1.0	55
29	Age-Related Loss of Lumbar Spinal Lordosis and Mobility – A Study of 323 Asymptomatic Volunteers. <i>PLoS ONE</i> , 2014, 9, e116186.	1.1	55
30	The effects of age and gender on the lumbopelvic rhythm in the sagittal plane in 309 subjects. <i>Journal of Biomechanics</i> , 2015, 48, 3080-3087.	0.9	54
31	Stepwise reduction of functional spinal structures increase disc bulge and surface strains. <i>Journal of Biomechanics</i> , 2008, 41, 1953-1960.	0.9	51
32	Hydrogels for nucleus replacement – Facing the biomechanical challenge. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2012, 14, 67-77.	1.5	51
33	Is it possible to estimate the compressive force in the lumbar spine from intradiscal pressure measurements? A finite element evaluation. <i>Medical Engineering and Physics</i> , 2013, 35, 1385-1390.	0.8	51
34	<i>In vitro</i> and <i>in silico</i> investigations of disc nucleus replacement. <i>Journal of the Royal Society Interface</i> , 2012, 9, 1869-1879.	1.5	50
35	In vivo loads on a vertebral body replacement during different lifting techniques. <i>Journal of Biomechanics</i> , 2016, 49, 890-895.	0.9	46
36	Interaction Between Finite Helical Axes and Facet Joint Forces Under Combined Loading. <i>Spine</i> , 2008, 33, 2741-2748.	1.0	42

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37	Dependency of disc degeneration on shear and tensile strains between annular fiber layers for complex loads. <i>Medical Engineering and Physics</i> , 2009, 31, 642-649.	0.8	42
38	Influence of lumbar spine rhythms and intra-abdominal pressure on spinal loads and trunk muscle forces during upper body inclination. <i>Medical Engineering and Physics</i> , 2016, 38, 333-338.	0.8	42
39	Impact of material and morphological parameters on the mechanical response of the lumbar spine – A finite element sensitivity study. <i>Journal of Biomechanics</i> , 2017, 53, 185-190.	0.9	41
40	The effect of age and sex on the cervical range of motion – A systematic review and meta-analysis. <i>Journal of Biomechanics</i> , 2018, 75, 13-27.	0.9	38
41	The effect of degenerative morphological changes of the intervertebral disc on the lumbar spine biomechanics: a poroelastic finite element investigation. <i>Computer Methods in Biomechanics and Biomedical Engineering</i> , 2011, 14, 729-739.	0.9	37
42	Effect of age and sex on lumbar lordosis and the range of motion. A systematic review and meta-analysis. <i>Journal of Biomechanics</i> , 2019, 82, 1-19.	0.9	34
43	Lumbar interbody fusion: a parametric investigation of a novel cage design with and without posterior instrumentation. <i>European Spine Journal</i> , 2012, 21, 455-462.	1.0	32
44	Monitoring the load on a telemeterised vertebral body replacement for a period of up to 65 months. <i>European Spine Journal</i> , 2013, 22, 2575-2581.	1.0	32
45	Measurement of the number of lumbar spinal movements in the sagittal plane in a 24-hour period. <i>European Spine Journal</i> , 2014, 23, 2375-2384.	1.0	32
46	Is the ovine intervertebral disc a small human one?. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2013, 17, 229-241.	1.5	31
47	Effect of intervertebral disc degeneration on disc cell viability: a numerical investigation. <i>Computer Methods in Biomechanics and Biomedical Engineering</i> , 2013, 16, 328-337.	0.9	31
48	Computational analyses of different intervertebral cages for lumbar spinal fusion. <i>Journal of Biomechanics</i> , 2015, 48, 3274-3282.	0.9	30
49	Computational biomechanics of a lumbar motion segment in pure and combined shear loads. <i>Journal of Biomechanics</i> , 2013, 46, 2513-2521.	0.9	27
50	Relationship between intervertebral disc and facet joint degeneration: A probabilistic finite element model study. <i>Journal of Biomechanics</i> , 2020, 102, 109518.	0.9	27
51	Spinal loads as influenced by external loads: A combined in vivo and in silico investigation. <i>Journal of Biomechanics</i> , 2015, 48, 578-584.	0.9	26
52	Preload substantially influences the intervertebral disc stiffness in loading–unloading cycles of compression. <i>Journal of Biomechanics</i> , 2016, 49, 1926-1932.	0.9	26
53	Review of the fluid flow within intervertebral discs - How could in vitro measurements replicate in vivo?. <i>Journal of Biomechanics</i> , 2016, 49, 3133-3146.	0.9	26
54	Effect of disc degeneration on the mechanical behavior of the human lumbar spine: a probabilistic finite element study. <i>Spine Journal</i> , 2018, 18, 1910-1920.	0.6	26

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55	Investigation of different cage designs and mechano-regulation algorithms in the lumbar interbody fusion process – A finite element analysis. <i>Journal of Biomechanics</i> , 2014, 47, 1514-1519.	0.9	25
56	Development of a risk stratification and prevention index for stratified care in chronic low back pain. Focus: yellow flags (MiSpEx network). <i>Pain Reports</i> , 2017, 2, e623.	1.4	25
57	A new laser scanning technique for imaging intervertebral disc displacement and its application to modeling nucleotomy. <i>Clinical Biomechanics</i> , 2008, 23, 260-269.	0.5	24
58	In vivo implant forces acting on a vertebral body replacement during upper body flexion. <i>Journal of Biomechanics</i> , 2015, 48, 560-565.	0.9	23
59	Biomechanics of the L5–S1 motion segment after total disc replacement – Influence of iatrogenic distraction, implant positioning and preoperative disc height on the range of motion and loading of facet joints. <i>Journal of Biomechanics</i> , 2015, 48, 3283-3291.	0.9	23
60	Spinal Deformity Surgery: A Critical Review of Alignment and Balance. <i>Asian Spine Journal</i> , 2018, 12, 775-783.	0.8	23
61	Discretization error when using finite element models: Analysis and evaluation of an underestimated problem. <i>Journal of Biomechanics</i> , 2009, 42, 1926-1934.	0.9	22
62	Intradiscal pressure measurements: A challenge or a routine?. <i>Journal of Biomechanics</i> , 2016, 49, 864-868.	0.9	22
63	Parameters influencing the outcome after total disc replacement at the lumbosacral junction. Part 1: misalignment of the vertebrae adjacent to a total disc replacement affects the facet joint and facet capsule forces in a probabilistic finite element analysis. <i>European Spine Journal</i> , 2013, 22, 2271-2278.	1.0	21
64	In vivo measurements of the effect of whole body vibration on spinal loads. <i>European Spine Journal</i> , 2014, 23, 666-672.	1.0	21
65	Finite element study of human lumbar disc nucleus replacements. <i>Computer Methods in Biomechanics and Biomedical Engineering</i> , 2014, 17, 1762-1776.	0.9	21
66	Separate the Sheep from the Goats. <i>Journal of Bone and Joint Surgery - Series A</i> , 2017, 99, e102.	1.4	21
67	Fluid-flow dependent response of intervertebral discs under cyclic loading: On the role of specimen preparation and preconditioning. <i>Journal of Biomechanics</i> , 2016, 49, 846-856.	0.9	20
68	Posterior motion preserving implants evaluated by means of intervertebral disc bulging and annular fiber strains. <i>Clinical Biomechanics</i> , 2012, 27, 218-225.	0.5	19
69	Considerations when loading spinal finite element models with predicted muscle forces from inverse static analyses. <i>Journal of Biomechanics</i> , 2013, 46, 1376-1378.	0.9	19
70	Internal load-sharing in the human passive lumbar spine: Review of in vitro and finite element model studies. <i>Journal of Biomechanics</i> , 2020, 102, 109441.	0.9	19
71	Differences between clinical –snap-shot– and –real-life– assessments of lumbar spine alignment and motion – What is the –real– lumbar lordosis of a human being?. <i>Journal of Biomechanics</i> , 2016, 49, 638-644.	0.9	18
72	A method to obtain surface strains of soft tissues using a laser scanning device. <i>Journal of Biomechanics</i> , 2008, 41, 2402-2410.	0.9	17

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73	Prediction equations for human thoracic and lumbar vertebral morphometry. <i>Journal of Anatomy</i> , 2010, 216, 320-328.	0.9	17
74	Parameters influencing the outcome after total disc replacement at the lumbosacral junction. Part 2: distraction and posterior translation lead to clinical failure after a mean follow-up of 5 years. <i>European Spine Journal</i> , 2013, 22, 2279-2287.	1.0	17
75	How does the way a weight is carried affect spinal loads?. <i>Ergonomics</i> , 2014, 57, 262-270.	1.1	15
76	How do we stand? Variations during repeated standing phases of asymptomatic subjects and low back pain patients. <i>Journal of Biomechanics</i> , 2018, 70, 67-76.	0.9	15
77	Influence of spinal disc translational stiffness on the lumbar spinal loads, ligament forces and trunk muscle forces during upper body inclination. <i>Medical Engineering and Physics</i> , 2017, 46, 54-62.	0.8	14
78	Spinal loads and trunk muscles forces during level walking – A combined in vivo and in silico study on six subjects. <i>Journal of Biomechanics</i> , 2018, 70, 113-123.	0.9	13
79	Effect of arm swinging on lumbar spine and hip joint forces. <i>Journal of Biomechanics</i> , 2018, 70, 185-195.	0.9	13
80	The shape and mobility of the thoracic spine in asymptomatic adults – A systematic review of in vivo studies. <i>Journal of Biomechanics</i> , 2018, 78, 21-35.	0.9	12
81	Remedy for fictive negative pressures in biphasic finite element models of the intervertebral disc during unloading. <i>Computer Methods in Biomechanics and Biomedical Engineering</i> , 2011, 14, 293-303.	0.9	11
82	Review of existing measurement tools to assess spinal motion during prehospital immobilization. <i>European Journal of Emergency Medicine</i> , 2018, 25, 161-168.	0.5	11
83	Computational study of the role of fluid content and flow on the lumbar disc response in cyclic compression: Replication of in vitro and in vivo conditions. <i>Journal of Biomechanics</i> , 2018, 70, 16-25.	0.9	11
84	In vivo hip and lumbar spine implant loads during activities in forward bent postures. <i>Journal of Biomechanics</i> , 2020, 102, 109517.	0.9	11
85	Prediction of the human thoracic and lumbar articular facet joint morphometry from radiographic images. <i>Journal of Anatomy</i> , 2011, 218, 191-201.	0.9	10
86	Sensitivity analysis of the position of the intervertebral centres of reaction in upright standing – a musculoskeletal model investigation of the lumbar spine. <i>Medical Engineering and Physics</i> , 2016, 38, 297-301.	0.8	10
87	Structural Behavior of Human Lumbar Intervertebral Disc under Direct Shear. <i>Journal of Applied Biomaterials and Functional Materials</i> , 2015, 13, 66-71.	0.7	9
88	Are there characteristic motion patterns in the lumbar spine during flexion?. <i>Journal of Biomechanics</i> , 2018, 70, 77-81.	0.9	9
89	What does the shape of our back tell us? Correlation between sacrum orientation and lumbar lordosis. <i>Spine Journal</i> , 2018, 18, 655-662.	0.6	9
90	Sex-dependent differences in lumbo-pelvic coordination for different lifting tasks: A study on asymptomatic adults. <i>Journal of Biomechanics</i> , 2020, 102, 109505.	0.9	9

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91	Comparison of various contact algorithms for poroelastic tissues. <i>Computer Methods in Biomechanics and Biomedical Engineering</i> , 2014, 17, 1323-1334.	0.9	8
92	Automatic distinction of upper body motions in the main anatomical planes. <i>Medical Engineering and Physics</i> , 2014, 36, 516-521.	0.8	8
93	Application of a novel spinal posture and motion measurement system in active and static sitting. <i>Ergonomics</i> , 2015, 58, 1605-1610.	1.1	7
94	Does Total Hip Arthroplasty Affect Spinopelvic and Spinal Alignment?. <i>Clinical Spine Surgery</i> , 2022, 35, E627-E635.	0.7	7
95	Temporal and spatial variations of pressure within intervertebral disc nuclei. <i>Journal of the Mechanical Behavior of Biomedical Materials</i> , 2018, 79, 309-313.	1.5	6
96	Numerical simulations of bone remodelling and formation following nucleotomy. <i>Journal of Biomechanics</i> , 2019, 88, 138-147.	0.9	6
97	Sensitivity of the Cervical Disc Loads, Translations, Intradiscal Pressure, and Muscle Activity Due to Segmental Mass, Disc Stiffness, and Muscle Strength in an Upright Neutral Posture. <i>Frontiers in Bioengineering and Biotechnology</i> , 2022, 10, 751291.	2.0	6
98	Comparison of three validated systems to analyse spinal shape and motion. <i>Scientific Reports</i> , 2022, 12, .	1.6	6
99	Spine loading and deformation “ From loading to recovery. <i>Journal of Biomechanics</i> , 2016, 49, 813-816.	0.9	5
100	Normal trabecular vertebral bone is formed via rapid transformation of mineralized spicules: A high-resolution 3D ex-vivo murine study. <i>Acta Biomaterialia</i> , 2019, 86, 429-440.	4.1	5
101	Review article on spine kinematics of quadrupeds and bipeds during walking. <i>Journal of Biomechanics</i> , 2020, 102, 109631.	0.9	5
102	Sex-Dependent Estimation of Spinal Loads During Static Manual Material Handling Activities” Combined in vivo and in silico Analyses. <i>Frontiers in Bioengineering and Biotechnology</i> , 2021, 9, 750862.	2.0	5
103	Spinal fusion without instrumentation “ Experimental animal study. <i>Clinical Biomechanics</i> , 2017, 46, 6-14.	0.5	4
104	Which is the best-suited landmark to assess the thoracic orientation?. <i>Journal of Biomechanics</i> , 2020, 102, 109545.	0.9	4
105	Optimal assessment of upper body motion “ Which and how many landmarks need to be captured for representing rigid body orientation?. <i>Journal of Biomechanics</i> , 2022, 132, 110952.	0.9	3
106	How reproducible do we stand and sit? Indications for a reliable sagittal spinal assessment. <i>Clinical Biomechanics</i> , 2019, 70, 123-130.	0.5	2
107	Is the sheep a suitable model to study the mechanical alterations of disc degeneration in humans? A probabilistic finite element model study. <i>Journal of Biomechanics</i> , 2019, 84, 172-182.	0.9	2
108	Spinal Loads during Cycling on an Ergometer. <i>PLoS ONE</i> , 2014, 9, e95497.	1.1	2

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109	2nd international workshop on spinal loading and deformation. Journal of Biomechanics, 2018, 70, 1-3.	0.9	1
110	Differences in 3D vs. 2D analysis in lumbar spinal fusion simulations. Journal of Biomechanics, 2018, 72, 262-267.	0.9	1
111	Preoperative Segmental Disc Geometry as a Possible Predictor for the Clinical Outcome of Lumbosacral Total Disc Replacement. Journal of Spine, 2016, 05, .	0.2	0
112	Association between hamstring flexibility and lumbopelvic posture and kinematics during ergometer rowing. Translational Sports Medicine, 2019, 2, 380-386.	0.5	0
113	3rd International workshop on spinal loading and deformation. Journal of Biomechanics, 2020, 102, 109627.	0.9	0
114	The sagittal sways of back lordosis and sacral orientation during still standing at different arm positions. Journal of Biomechanics, 2021, 114, 110149.	0.9	0
115	Characteristics of Lumbar Flexion Rhythm at Different Arm Positions. World Neurosurgery, 2021, 152, e81-e85.	0.7	0