Peter Pivonka

List of Publications by Year
in descending order

105 papers	2,851 citations	136885 32 h-index	197736 49 g-index
108 all docs	108 docs citations	108 times ranked	2966 citing authors

#	Article	IF	Citations
1	Model structure and control of bone remodeling: A theoretical study. Bone, 2008, 43, 249-263.	1.4	237
2	In situ handheld threeâ€dimensional bioprinting for cartilage regeneration. Journal of Tissue Engineering and Regenerative Medicine, 2018, 12, 611-621.	1.3	232
3	Handheld Co-Axial Bioprinting: Application to in situ surgical cartilage repair. Scientific Reports, 2017, 7, 5837.	1.6	160
4	Microscopic effects on chloride diffusivity of cement pastesâ€”a scale-transition analysis. Cement and Concrete Research, 2004, 34, 2251-2260.	4.6	125
5	Theoretical investigation of the role of the RANKâ€“RANKLâ€“OPG system in bone remodeling. Journal of Theoretical Biology, 2010, 262, 306-316.	0.8	102
6	Coupling systems biology with multiscale mechanics, for computer simulations of bone remodeling. Computer Methods in Applied Mechanics and Engineering, 2013, 254, 181-196.	3.4	92
7	Femoral shaft strains during daily activities: Implications for atypical femoral fractures. Clinical Biomechanics, 2014, 29, 869-876.	0.5	76
8	Poromicromechanics reveals that physiological bone strains induce osteocyte-stimulating lacunar pressure. Biomechanics and Modeling in Mechanobiology, 2016, 15, 9-28.	1.4	71
9	A mathematical multiscale model of bone remodeling, accounting for pore space-specific mechanosensation. Bone, 2018, 107, 208-221.	1.4	65
10	Mathematical modeling in bone biology: From intracellular signaling to tissue mechanics. Bone, 2010, 47, 181-189.	1.4	63
11	The influence of bone surface availability in bone remodellingâ€”A mathematical model including coupled geometrical and biomechanical regulations of bone cells. Engineering Structures, 2013, 47, 134-147.	2.6	63
12	The Application of Pulsed Electromagnetic Fields (PEMFs) for Bone Fracture Repair: Past and Perspective Findings. Annals of Biomedical Engineering, 2018, 46, 525-542.	1.3	62
13	The effect of cyclic deformation and solute binding on solute transport in cartilage. Archives of Biochemistry and Biophysics, 2007, 457, 47-56.	1.4	54
14	Spatio-temporal structure of cell distribution in cortical Bone Multicellular Units: A mathematical model. Bone, 2011, 48, 918-926.	1.4	54
15	Lacunar-canalicular network in femoral cortical bone is reduced in aged women and is predominantly due to a loss of canalicular porosity. Bone Reports, 2017, 7, 9-16.	0.2	52
16	Role of mathematical modeling in bone fracture healing. BoneKEy Reports, 2012, 1, 221.	2.7	49
17	A multiscale mechanobiological model of bone remodelling predicts site-specific bone loss in the femur during osteoporosis and mechanical disuse. Biomechanics and Modeling in Mechanobiology, 2016, 15, 43-67.	1.4	48
18	A comparison of optimisation methods and knee joint degrees of freedom on muscle force predictions during single-leg hop landings. Journal of Biomechanics, 2014, 47, 2863-2868.	0.9	47

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19	Theoretical Analysis of Anion Exclusion and Diffusive Transport Through Platy-Clay Soils. Transport in Porous Media, 2004, 57, 251-277.	1.2	44
20	Comparative study of methods used to estimate ionic diffusion coefficients using migration tests. Cement and Concrete Research, 2007, 37, 1152-1163.	4.6	44
21	Mathematical modeling of postmenopausal osteoporosis and its treatment by the antiâ€catabolic drug denosumab. International Journal for Numerical Methods in Biomedical Engineering, 2014, 30, 1-27.	1.0	44
22	Modelling the anabolic response of bone using a cell population model. Journal of Theoretical Biology, 2012, 307, 42-52.	0.8	43
23	Comparative studies of 3D-constitutive models for concrete: application to mixed-mode fracture. International Journal for Numerical Methods in Engineering, 2004, 60, 549-570.	1.5	42
24	Integrated Model of IGF-I Mediated Biosynthesis in a Deformed Articular Cartilage. Journal of Engineering Mechanics - ASCE, 2009, 135, 439-449.	1.6	40
25	High dose dietary vitamin D 3 increases bone mass and strength in mice. Bone Reports, 2017, 6, 44-50.	0.2	38
26	Computational Modeling of Interactions between Multiple Myeloma and the Bone Microenvironment. PLoS ONE, 2011, 6, e27494.	1.1	37
27	On the role of diffusible binding partners in modulating the transport and concentration of proteins in tissues. Journal of Theoretical Biology, 2010, 263, 20-29.	0.8	36
28	IGF UPTAKE WITH COMPETITIVE BINDING IN ARTICULAR CARTILAGE. Journal of Biological Systems, 2008, 16, 175-195.	0.5	35
29	Micro-poro-elasticity of baghdadite-based bone tissue engineering scaffolds: A unifying approach based on ultrasonics, nanoindentation, and homogenization theory. Materials Science and Engineering C, 2015, 46, 553-564.	3.8	35
30	Solute transport in cartilage undergoing cyclic deformation. Computer Methods in Biomechanics and Biomedical Engineering, 2007, 10, 265-278.	0.9	34
31	The relationship between porosity and specific surface in human cortical bone is subject specific. Bone, 2015, 72, 109-117.	1.4	34
32	Characterization of drug-release kinetics in trabecular bone from titania nanotube implants. International Journal of Nanomedicine, 2012, 7, 4883.	3.3	32
33	Drug diffusion, integration, and stability of nanoengineered drugâ€releasing implants in bone exâ€vivo. Journal of Biomedical Materials Research - Part A, 2016, 104, 714-725.	2.1	32
34	Mechanobiological osteocyte feedback drives mechanostat regulation of bone in a multiscale computational model. Biomechanics and Modeling in Mechanobiology, 2019, 18, 1475-1496.	1.4	32
35	Efficacy of novel synthetic bone substitutes in the reconstruction of large segmental bone defects in sheep tibiae. Biomedical Materials (Bristol), 2016, 11, 015016.	1.7	30
36	Endocortical bone loss in osteoporosis: the role of bone surface availability. International Journal for Numerical Methods in Biomedical Engineering, 2013, 29, 1307-1322.	1.0	27

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37	Effects of long-term treatment of denosumab on bone mineral density: insights from an in-silico model of bone mineralization. Bone, 2019, 125, 87-95.	1.4	27
38	Estimation of anisotropic permeability in trabecular bone based on microCT imaging and pore-scale fluid dynamics simulations. Bone Reports, 2017, 6, 129-139.	0.2	25
39	Investigation of bone resorption within a cortical basic multicellular unit using a lattice-based computational model. Bone, 2012, 50, 378-389.	1.4	24
40	Bone refilling in cortical basic multicellular units: insights into tetracycline double labelling from a computational model. Biomechanics and Modeling in Mechanobiology, 2014, 13, 185-203.	1.4	24
41	Accuracy of a novel marker tracking approach based on the low-cost Microsoft Kinect v2 sensor. Medical Engineering and Physics, 2018, 59, 63-69.	0.8	24
42	A Multiscale Framework Based on the Physiome Markup Languages for Exploring the Initiation of Osteoarthritis at the Boneâ€“Cartilage Interface. IEEE Transactions on Biomedical Engineering, 2011, 58, 3532-3536.	2.5	21
43	Shapes of loading surfaces of concrete models and their influence on the peak load and failure mode in structural analyses. International Journal of Engineering Science, 2003, 41, 1649-1665.	2.7	20
44	Cortical Bone Porosity in Rabbit Models of Osteoporosis. Journal of Bone and Mineral Research, 2020, 35, 2211-2228.	3.1	20
45	Modelling Human Locomotion to Inform Exercise Prescription for Osteoporosis. Current Osteoporosis Reports, 2020, 18, 301-311.	1.5	17
46	Numerical estimation of effective diffusion coefficients for charged porous materials based on micro-scale analyses. Computers and Geotechnics, 2010, 37, 280-287.	2.3	16
47	Sequential MRI reveals vertebral body wedging significantly contributes to coronal plane deformity progression in adolescent idiopathic scoliosis during growth. Spine Deformity, 2020, 8, 901-910.	0.7	15
48	Investigation of Donnan equilibrium in charged porous materialsâ€”a scale transition analysis. Transport in Porous Media, 2007, 69, 215-237.	1.2	14
49	Computational model of the dual action of PTH â€” Application to a rat model of osteoporosis. Journal of Theoretical Biology, 2019, 473, 67-79.	0.8	14
50	A fully coupled poroelastic reactive-transport model of cartilage. MCB Molecular and Cellular Biomechanics, 2008, 5, 133-53.	0.3	14
51	Study of the combined effects of PTH treatment and mechanical loading in postmenopausal osteoporosis using a new mechanistic PK-PD model. Biomechanics and Modeling in Mechanobiology, 2020, 19, 1765-1780.	1.4	13
52	Functional Adaptation of Bone: The Mechanostat and Beyond. CISM International Centre for Mechanical Sciences, Courses and Lectures, 2018, , 1-60.	0.3	13
53	Electrodiffusive Transport in Charged Porous Media: From the Particle-Level Scale to the Macroscopic Scale Using Volume Averaging. Journal of Porous Media, 2009, 12, 101-118.	1.0	13
54	Assessment of romosozumab efficacy in the treatment of postmenopausal osteoporosis: Results from a mechanistic PK-PD mechanostat model of bone remodeling. Bone, 2020, 133, 115223.	1.4	11

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55	Assessment of femoral neck strength and bone mineral density changes following exercise using 3D-DXA images. Journal of Biomechanics, 2021, 119, 110315.	0.9	11
56	Treatment with a long-acting chimeric CSF1 molecule enhances fracture healing of healthy and osteoporotic bones. Biomaterials, 2021, 275, 120936.	5.7	11
57	The effect of the third invariant in computational plasticity. Engineering Computations, 2003, 20, 741-753.	0.7	10
58	A thermodynamically consistent model of bone rotary remodeling: a 2D study. Computer Methods in Biomechanics and Biomedical Engineering, 2017, 20, S127-S128.	0.9	10
59	Differences in Hip and Knee Running Moments across Female Pubertal Development. Medicine and Science in Sports and Exercise, 2018, 50, 1015-1020.	0.2	10
60	Electro-diffusive transport in macroscopic porous media: Estimation of effective transport properties using numerical upscaling. Computers and Geotechnics, 2013, 48, 283-292.	2.3	9
61	Differences in Hip and Knee Landing Moments across Female Pubertal Development. Medicine and Science in Sports and Exercise, 2019, 51, 123-131.	0.2	9
62	Combined Effects of Exercise and Denosumab Treatment on Local Failure in Post-menopausal Osteoporosisâ€“Insights from Bone Remodelling Simulations Accounting for Mineralisation and Damage. Frontiers in Bioengineering and Biotechnology, 2021, 9, 635056.	2.0	9
63	Concrete Subjected to Triaxial Stress States: Application to Pull-Out Analyses. Journal of Engineering Mechanics - ASCE, 2004, 130, 1486-1498.	1.6	8
64	Numerical particle-scale study of swelling pressure in clays. KSCE Journal of Civil Engineering, 2009, 13, 273-279.	0.9	8
65	The Femoral Neck Mechanoresponse to Hip Extensors Exercise: A Case Study. Journal of Osteoporosis, 2017, 2017, 1-9.	0.1	8
66	Numerical calculation of permeability of periodic porous materials: Application to periodic arrays of spheres and 3D scaffold microstructures. International Journal for Numerical Methods in Engineering, 2019, 118, 783-803.	1.5	8
67	Estimation of load conditions and strain distribution for in vivo murine tibia compression loading using experimentally informed finite element models. Journal of Biomechanics, 2021, 115, 110140.	0.9	8
68	A mathematical model for targeting chemicals to tissues by exploiting complex degradation. Biology Direct, 2011, 6, 46.	1.9	7
69	Are drug holidays a safe option in treatment of osteoporosis? â€" Insights from an in silico mechanistic PKâ€“PD model of denosumab treatment of postmenopausal osteoporosis. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 113, 104140.	1.5	7
70	Cortical Thickness Adaptive Response to Mechanical Loading Depends on Periosteal Position and Varies Linearly With Loading Magnitude. Frontiers in Bioengineering and Biotechnology, 2021, 9, 671606.	2.0	7
71	Mathematical modelling of bone adaptation of the metacarpal subchondral bone in racehorses. Biomechanics and Modeling in Mechanobiology, 2018, 17, 877-890.	1.4	6
72	Modal analysis of nanoindentation data, confirming that reduced bone turnover may cause increased tissue mineralization/elasticity. Journal of the Mechanical Behavior of Biomedical Materials, 2018, 84, 217-224.	1.5	6

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73	Muscular Coordination of Single-Leg Hop Landing in Uninjured and Anterior Cruciate Ligament-Reconstructed Individuals. Journal of Applied Biomechanics, 2020, 36, 235-243.	0.3	6
74	Comparison of the moulding ability of Plaster of Paris and polyester cast material in the healthy adult forearm. Injury, 2017, 48, 2586-2589.	0.7	5
75	Novel pressure inlet and outlet boundary conditions for Smoothed Particle Hydrodynamics, applied to real problems in porous media flow. Journal of Computational Physics, 2021, 429, 110029.	1.9	5
76	A novel algorithm to resolve lack of convergence and checkerboard instability in bone adaptation simulations using nonâ€local averaging. International Journal for Numerical Methods in Biomedical Engineering, 2021, 37, e3419.	1.0	4
77	Three-Dimensional Quantification of Glenoid Bone Loss in Anterior Shoulder Instability: The Anatomic Concave Surface Area Method. Orthopaedic Journal of Sports Medicine, 2021, 9, 232596712110110.	0.8	4
78	Statistical Quantification of the Effects of Marker Misplacement and Soft-Tissue Artifact on Shoulder Kinematics and Kinetics. Life, 2022, 12, 819.	1.1	4
79	Poromechanical Stimulation of Bone Remodeling: A Continuum Micromechanics-Based Mathematical Model and Experimental Validation. , 2013, , .		3
80	BONE ORTHOTROPIC REMODELING AS A THERMODYNAMICALLY-DRIVEN EVOLUTION. Journal of Mechanics in Medicine and Biology, 2020, 20, 1950084.	0.3	3
81	Toward Patient Specific Models of Pediatric IVDs: A Parametric Study of IVD Mechanical Properties. Frontiers in Bioengineering and Biotechnology, 2021, 9, 632408.	2.0	3
82	Beam theory for rapid strain estimation in the mouse tibia compression model. Biomechanics and Modeling in Mechanobiology, 2022, 21, 513-525.	1.4	3
83	Estimating vertical and lateral pressures in periodically structured montmorillonite clay particles. Anais Da Academia Brasileira De Ciencias, 2010, 82, 13-24.	0.3	2
84	Computer Simulation-Based Modeling of the Pharmaceutical Intervention of Postmenopausal Osteoporosis by Denosumab. , 2012, , .		2
85	Foreword to the special issue on Bone and cartilage mechanobiology across the scales. Biomechanics and Modeling in Mechanobiology, 2016, 15, 5-7.	1.4	2
86	Structural and Material Changes of Human Cortical Bone With Age: Lessons from the Melbourne Femur Research Collection. , 2019, , 246-264.		2
87	Deep Learning-Based Automatic Segmentation for Reconstructing Vertebral Anatomy of Healthy Adolescents and Patients With Adolescent Idiopathic Scoliosis (AIS) Using MRI Data. IEEE Access, 2021, 9, 86811-86823.	2.6	2
88	A new model of bone remodeling and turnover set up in the framework of generalized continuum mechanics. Mathematics and Mechanics of Solids, 2021, 26, 1376-1393.	1.5	2
89	Computational Simulation of the Mechanobiological Regulation of Bone Remodeling by Means of a Coupled Systems Biology-Micromechanical Approach. , 2012, , .		2
90	Application of Disease System Analysis to Osteoporosis: From Temporal to Spatio-Temporal Assessment of Disease Progression and Intervention. CISM International Centre for Mechanical Sciences, Courses and Lectures, 2018, , 61-121.	0.3	2

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91	Biomechanical Markers of Forward Hop-Landing After ACL-Reconstruction: A Pattern Recognition Approach. Annals of Biomedical Engineering, 2022, 50, 330-342.	1.3	2
92	Assessment of Strategies for Safe Drug Discontinuation and Transition of Denosumab Treatment in PMOâ€"Insights From a Mechanistic PK/PD Model of Bone Turnover. Frontiers in Bioengineering and Biotechnology, 2022, 10, .	2.0	2
93	A hydrological study of on-site soil absorption systems. Water Management, 2013, 166, 43-53.	0.4	1
94	Effect of Polyester and Plaster of Paris Casts on Determination of Volumetric Bone Mineral Density Assessed by Peripheral Quantitative Computed Tomography (pQCT). Calcified Tissue International, 2016, 99, 454-461.	1.5	1
95	Design, Fabrication and Validation of a Precursor Pulsed Electromagnetic Field Device for Bone Fracture Repair. , 2018, 2018, 4166-4169.		1
96	Modeling of electro-diffusive ion transport through charged porous materials using a multiscale iterative approach. , 2010, , .		0
97	CARTILAGE DEGENERATION IS LINKED TO SUBCHONDRAL BONE REMODELLING: A MULTISCALE INVESTIGATION. Journal of Biomechanics, 2012, 45, S467.	0.9	0
98	Multiscale Bone Mechanobiology. , 2019, , 167-179.		0
99	3-Dimensional Quantification Glenoid Bone Loss in Recurrent Shoulder Instability â€“ Role in Establishing Parameters for Latarjet vs Bankart Procedure. Journal of Shoulder and Elbow Surgery, 2021, 30, e435-e436.	1.2	0
100	Investigation of Determinants of Atypical Femoral Fractures Using Multiscale Computational Modeling. IFMBE Proceedings, 2014, , 323-326.	0.2	0
101	Mathematical Modelling of Basic Multicellular Units: The Functional Units of Bone Remodeling. , 2015, , 45-74.		0
102	Developmental And Inter-limb Differences In ACL-relevant Biomechanics During Single Leg Landing. Medicine and Science in Sports and Exercise, 2016, 48, 739-740.	0.2	0
103	Algorithmic Formulation of Bone Fabric Evolution Based on the Dissipation Principle: A 2D Finite-Element Study. Advanced Structured Materials, 2020, , 49-69.	0.3	0
104	Development of a Computational Modelling Platform for Patient-specific Treatment of Osteoporosis. , 2020, , 85-107.		0
105	Theoretical Analysis of the Influence of a Diffuse Double-Layer On Darcyâ€™s Law. , 2005, , 289-298.		0