Rami Rami K Korhonen

List of Publications by Year
in descending order

119 papers	3,131 citations	186265 28 h-index	197818 49 g-index
126 all docs	126 docs citations	126 times ranked	2245 citing authors

#	Article	IF	Citations
1	Fibril reinforced poroelastic model predicts specifically mechanical behavior of normal, proteoglycan depleted and collagen degraded articular cartilage. Journal of Biomechanics, 2003, 36, 1373-1379.	2.1	243
2	Characterization of articular cartilage by combining microscopic analysis with a fibril-reinforced finite-element model. Journal of Biomechanics, 2007, 40, 1862-1870.	2.1	150
3	Collagen network primarily controls Poisson's ratio of bovine articular cartilage in compression. Journal of Orthopaedic Research, 2006, 24, 690-699.	2.3	126
4	Structure-Function Relationships in Enzymatically Modified Articular Cartilage. Cells Tissues Organs, 2003, 175, 121-132.	2.3	117
5	Stressâ€"relaxation of human patellar articular cartilage in unconfined compression: Prediction of mechanical response by tissue composition and structure. Journal of Biomechanics, 2008, 41, 1978-1986.	2.1	93
6	Real-time ultrasound analysis of articular cartilage degradation in vitro. Ultrasound in Medicine and Biology, 2002, 28, 519-525.	1.5	91
7	Importance of Collagen Orientation and Depth-Dependent Fixed Charge Densities of Cartilage on Mechanical Behavior of Chondrocytes. Journal of Biomechanical Engineering, 2008, 130, 021003.	1.3	84
8	Effects of radial tears and partial meniscectomy of lateral meniscus on the knee joint mechanics during the stance phase of the gait cycle-A 3D finite element study. Journal of Orthopaedic Research, 2013, 31, 1208-1217.	2.3	81
9	A Novel Method to Simulate the Progression of Collagen Degeneration of Cartilage in the Knee: Data from the Osteoarthritis Initiative. Scientific Reports, 2016, 6, 21415.	3.3	78
10	Experimental and computational analysis of soft tissue stiffness in forearm using a manual indentation device. Medical Engineering and Physics, 2011, 33, 1245-1253.	1.7	66
11	Compressive and tensile properties of articular cartilage in axial loading are modulated differently by osmotic environment. Medical Engineering and Physics, 2010, 32, 155-160.	1.7	64
12	Uncertainties in indentation testing of articular cartilage: A fibril-reinforced poroviscoelastic study. Medical Engineering and Physics, 2008, 30, 506-515.	1.7	59
13	Depth-dependent analysis of the role of collagen fibrils, fixed charges and fluid in the pericellular matrix of articular cartilage on chondrocyte mechanics. Journal of Biomechanics, 2008, 41, 480-485.	2.1	59
14	Quantitative Evaluation of the Mechanical Risks Caused by Focal Cartilage Defects in the Knee. Scientific Reports, 2016, 6, 37538.	3.3	59
15	A multi-scale finite element model for investigation of chondrocyte mechanics in normal and medial meniscectomy human knee joint during walking. Journal of Biomechanics, 2015, 48, 1397-1406.	2.1	54
16	Implementation of a gait cycle loading into healthy and meniscectomised knee joint models with fibril-reinforced articular cartilage. Computer Methods in Biomechanics and Biomedical Engineering, 2015, 18, 141-152.	1.6	53
17	A Review of the Combination of Experimental Measurements and Fibril-Reinforced Modeling for Investigation of Articular Cartilage and Chondrocyte Response to Loading. Computational and Mathematical Methods in Medicine, 2013, 2013, 1-23.	1.3	48
18	Ultrasound indentation of bovine knee articular cartilage in situ. Journal of Biomechanics, 2003, 36, 1259-1267.	2.1	47

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19	Comparison of different material models of articular cartilage in 3D computational modeling of the knee: Data from the Osteoarthritis Initiative (OAI). Journal of Biomechanics, 2016, 49, 3891-3900.	2.1	47
20	A novel mechanobiological model can predict how physiologically relevant dynamic loading causes proteoglycan loss in mechanically injured articular cartilage. Scientific Reports, 2018, 8, 15599.	3.3	46
21	The effect of geometry and abduction angle on the stresses in cemented UHMWPE acetabular cups â€" finite element simulations and experimental tests. BioMedical Engineering OnLine, 2005, 4, 32.	2.7	43
22	Elastic, Viscoelastic and Fibril-Reinforced Poroelastic Material Properties of Healthy and Osteoarthritic Human Tibial Cartilage. Annals of Biomedical Engineering, 2019, 47, 953-966.	2.5	43
23	Structure-function relationships of human meniscus. Journal of the Mechanical Behavior of Biomedical Materials, 2017, 67, 51-60.	3.1	42
24	The effect of constitutive representations and structural constituents of ligaments on knee joint mechanics. Scientific Reports, 2018, 8, 2323.	3.3	41
25	Composition of the pericellular matrix modulates the deformation behaviour of chondrocytes in articular cartilage under static loading. Medical and Biological Engineering and Computing, 2009, 47, 1281-90.	2.8	40
26	Implementation of subjectâ€specific collagen architecture of cartilage into a 2D computational model of a knee jointâ€"data from the osteoarthritis initiative (OAI). Journal of Orthopaedic Research, 2013, 31, 10-22.	2.3	38
27	Simulation of Subject-Specific Progression of Knee Osteoarthritis and Comparison to Experimental Follow-up Data: Data from the Osteoarthritis Initiative. Scientific Reports, 2017, 7, 9177.	3.3	37
28	Utilizing Atlas-Based Modeling to Predict Knee Joint Cartilage Degeneration: Data from the Osteoarthritis Initiative. Annals of Biomedical Engineering, 2019, 47, 813-825.	2.5	33
29	Collagen Network of Articular Cartilage Modulates Fluid Flow and Mechanical Stresses in Chondrocyte. Biomechanics and Modeling in Mechanobiology, 2006, 5, 150-159.	2.8	32
30	Raman microspectroscopic analysis of the tissue-specific composition of the human osteochondral junction in osteoarthritis: A pilot study. Acta Biomaterialia, 2020, 106, 145-155.	8.3	31
31	Application of a semi-automatic cartilage segmentation method for biomechanical modeling of the knee joint. Computer Methods in Biomechanics and Biomedical Engineering, 2017, 20, 1453-1463.	1.6	30
32	Structureâ€"Function Relationships of Healthy and Osteoarthritic Human Tibial Cartilage: Experimental and Numerical Investigation. Annals of Biomedical Engineering, 2020, 48, 2887-2900.	2.5	30
33	Superficial Collagen Fibril Modulus and Pericellular Fixed Charge Density Modulate Chondrocyte Volumetric Behaviour in Early Osteoarthritis. Computational and Mathematical Methods in Medicine, 2013, 2013, 1-14.	1.3	29
34	Comparison between kinetic and kinetic-kinematic driven knee joint finite element models. Scientific Reports, 2018, 8, 17351.	3.3	29
35	Prediction of local fixed charge density loss in cartilage following ACL injury and reconstruction: A computational proofâ€ofâ€concept study with MRI followâ€up. Journal of Orthopaedic Research, 2021, 39, 1064-1081.	2.3	28
36	New algorithm for simulation of proteoglycan loss and collagen degeneration in the knee joint: Data from the osteoarthritis initiative. Journal of Orthopaedic Research, 2018, 36, 1673-1683.	2.3	27

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37	Maximum shear strain-based algorithm can predict proteoglycan loss in damaged articular cartilage. Biomechanics and Modeling in Mechanobiology, 2019, 18, 753-778.	2.8	27
38	Experimental and numerical validation for the novel configuration of an arthroscopic indentation instrument. Physics in Medicine and Biology, 2003, 48, 1565-1576.	3.0	25
39	A Finite Element Study of Micropipette Aspiration of Single Cells: Effect of Compressibility. Computational and Mathematical Methods in Medicine, 2012, 2012, 1-9.	1.3	25
40	Merge of motion analysis, multibody dynamics and finite element method for the subject-specific analysis of cartilage loading patterns during gait: differences between rotation and moment-driven models of human knee joint. Multibody System Dynamics, 2016, 37, 271-290.	2.7	25
41	Machine Learning Classification of Articular Cartilage Integrity Using Near Infrared Spectroscopy. Cellular and Molecular Bioengineering, 2020, 13, 219-228.	2.1	25
42	Experimental and computational analysis of soft tissue mechanical response under negative pressure in forearm. Skin Research and Technology, 2013, 19, e356-65.	1.6	22
43	Eight-year trajectories of changes in health-related quality of life in knee osteoarthritis: Data from the Osteoarthritis Initiative (OAI). PLoS ONE, 2019, 14, e0219902.	2.5	22
44	Importance of Material Properties and Porosity of Bone on Mechanical Response of Articular Cartilage in Human Knee Jointâ€"A Two-Dimensional Finite Element Study. Journal of Biomechanical Engineering, 2014, 136, 121005.	1.3	21
45	A computational algorithm to simulate disorganization of collagen network in injured articular cartilage. Biomechanics and Modeling in Mechanobiology, 2018, 17, 689-699.	2.8	21
46	Evaluation of the Effect of Bariatric Surgery-Induced Weight Loss on Knee Gait and Cartilage Degeneration. Journal of Biomechanical Engineering, 2018, 140, .	1.3	21
47	Health-related quality of life in relation to symptomatic and radiographic definitions of knee osteoarthritis: data from Osteoarthritis Initiative (OAI) 4-year follow-up study. Health and Quality of Life Outcomes, 2018, 16, 154.	2.4	21
48	Osmotic loading of articular cartilage modulates cell deformations along primary collagen fibril directions. Journal of Biomechanics, 2010, 43, 783-787.	2.1	20
49	Spatial variation of fixed charge density in knee joint cartilage from sodium MRI â€" Implication on knee joint mechanics under static loading. Journal of Biomechanics, 2016, 49, 3387-3396.	2.1	20
50	Mechanobiological model for simulation of injured cartilage degradation via pro-inflammatory cytokines and mechanical stimulus. PLoS Computational Biology, 2020, 16, e1007998.	3.2	20
51	Correlation of Subchondral Bone Density and Structure from Plain Radiographs with Micro Computed Tomography Ex Vivo. Annals of Biomedical Engineering, 2016, 44, 1698-1709.	2.5	19
52	The effect of different preconditioning protocols on repeatability of bovine ACL stress-relaxation response in tension. Journal of the Mechanical Behavior of Biomedical Materials, 2019, 90, 493-501.	3.1	19
53	Site-specific glycosaminoglycan content is better maintained in the pericellular matrix than the extracellular matrix in early post-traumatic osteoarthritis. PLoS ONE, 2018, 13, e0196203.	2.5	18
54	Computational evaluation of altered biomechanics related to articular cartilage lesions observed in vivo. Journal of Orthopaedic Research, 2019, 37, 1042-1051.	2.3	18

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55	Multiparametric MR imaging reveals early cartilage degeneration at 2 and 8 weeks after ACL transection in a rabbit model. Journal of Orthopaedic Research, 2020, 38, 1974-1986.	2.3	18
56	Collagen fibres determine the crack morphology in articular cartilage. Acta Biomaterialia, 2021, 126, 301-314.	8.3	18
57	Early bone growth on the surface of titanium implants in rat femur is enhanced by an amorphous diamond coating. Monthly Notices of the Royal Astronomical Society: Letters, 2011, 82, 499-503.	3.3	17
58	Anterior cruciate ligament transection alters the n-3/n-6 fatty acid balance in the lapine infrapatellar fat pad. Lipids in Health and Disease, 2019, 18, 67.	3.0	17
59	Identification of locations susceptible to osteoarthritis in patients with anterior cruciate ligament reconstruction: Combining knee joint computational modelling with follow-up T1Ï•and T2 imaging. Clinical Biomechanics, 2020, 79, 104844.	1.2	17
60	Anterior cruciate ligament transection of rabbits alters composition, structure and biomechanics of articular cartilage and chondrocyte deformation 2â€‾weeks post-surgery in a site-specific manner. Journal of Biomechanics, 2020, 98, 109450.	2.1	17
61	Estimation of the Effect of Body Weight on the Development of Osteoarthritis Based on Cumulative Stresses in Cartilage: Data from the Osteoarthritis Initiative. Annals of Biomedical Engineering, 2018, 46, 334-344.	2.5	16
62	Experimental mechanical strain measurement of tissues. PeerJ, 2019, 7, e6545.	2.0	16
63	Hypotonic challenge modulates cell volumes differently in the superficial zone of intact articular cartilage and cartilage explant. Biomechanics and Modeling in Mechanobiology, 2012, 11, 665-675.	2.8	15
64	Characterizing human subchondral bone properties using near-infrared (NIR) spectroscopy. Scientific Reports, 2018, 8, 9733.	3.3	15
65	12 Degrees of Freedom Muscle Force Driven Fibril-Reinforced Poroviscoelastic Finite Element Model of the Knee Joint. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2021, 29, 123-133.	4.9	15
66	Structural and Compositional Changes in Peri- and Extracellular Matrix of Osteoarthritic Cartilage Modulate Chondrocyte Morphology. Cellular and Molecular Bioengineering, 2011, 4, 484-494.	2.1	14
67	Three dimensional patient-specific collagen architecture modulates cartilage responses in the knee joint during gait. Computer Methods in Biomechanics and Biomedical Engineering, 2016, 19, 1225-1240.	1.6	14
68	The effect of fixed charge density and cartilage swelling on mechanics of knee joint cartilage during simulated gait. Journal of Biomechanics, 2017, 61, 34-44.	2.1	14
69	A multiscale framework for evaluating three-dimensional cell mechanics in fibril-reinforced poroelastic tissues with anatomical cell distribution â€“ Analysis of chondrocyte deformation behavior in mechanically loaded articular cartilage. Journal of Biomechanics, 2020, 101, 109648.	2.1	13
70	An EMG-Assisted Muscle-Force Driven Finite Element Analysis Pipeline to Investigate Joint- and Tissue-Level Mechanical Responses in Functional Activities: Towards a Rapid Assessment Toolbox. IEEE Transactions on Biomedical Engineering, 2022, 69, 2860-2871.	4.2	13
71	A combined experimental atomic force microscopy-based nanoindentation and computational modeling approach to unravel the key contributors to the time-dependent mechanical behavior of single cells. Biomechanics and Modeling in Mechanobiology, 2017, 16, 297-311.	2.8	11
72	Elastic, Dynamic Viscoelastic and Model-Derived Fibril-Reinforced Poroelastic Mechanical Properties of Normal and Osteoarthritic Human Femoral Condyle Cartilage. Annals of Biomedical Engineering, 2021, 49, 2622-2634.	2.5	11

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73	Rapid CT-based Estimation of Articular Cartilage Biomechanics in the Knee Joint Without Cartilage Segmentation. Annals of Biomedical Engineering, 2020, 48, 2965-2975.	2.5	10
74	Automated analysis of rabbit knee calcified cartilage morphology using microâ€computed tomography and deep learning. Journal of Anatomy, 2021, 239, 251-263.	1.5	10
75	Improvement of arthroscopic cartilage stiffness probe using amorphous diamond coating. , 2005, 73B, 15-22.		9
76	Cellâ€“tissue interactions in osteoarthritic human hip joint articular cartilage. Connective Tissue Research, 2014, 55, 282-291.	2.3	9
77	New Concept to Restore Normal Cell Responses in Osteoarthritic Knee Joint Cartilage. Exercise and Sport Sciences Reviews, 2015, 43, 143-152.	3.0	9
78	Topographical investigation of changes in depthâ€wise proteoglycan distribution in rabbit femoral articular cartilage at 4 weeks after transection of the anterior cruciate ligament. Journal of Orthopaedic Research, 2015, 33, 1278-1286.	2.3	9
79	Alterations in structural macromolecules and chondrocyte deformations in lapine retropatellar cartilage 9 weeks after anterior cruciate ligament transection. Journal of Orthopaedic Research, 2018, 36, 342-350.	2.3	9
80	Functional and structural properties of human patellar articular cartilage in osteoarthritis. Journal of Biomechanics, 2021, 126, 110634.	2.1	9
81	Near Infrared Spectroscopic Evaluation of Ligament and Tendon Biomechanical Properties. Annals of Biomedical Engineering, 2019, 47, 213-222.	2.5	8
82	Discrete element and finite element methods provide similar estimations for hip joint contact mechanics during walking gait. Journal of Biomechanics, 2021, 115, 110163.	2.1	8
83	Structure, composition and fibril-reinforced poroviscoelastic properties of bovine knee ligaments and patellar tendon. Journal of the Royal Society Interface, 2021, 18, 20200737.	3.4	8
84	A numerical framework for mechano-regulated tendon healingâ€"Simulation of early regeneration of the Achilles tendon. PLoS Computational Biology, 2021, 17, e1008636.	3.2	8
85	High-resolution infrared microspectroscopic characterization of cartilage cell microenvironment. Acta Biomaterialia, 2021, 134, 252-260.	8.3	8
86	Shear strain and inflammationâ€induced fixed charge density loss in the knee joint cartilage following ACL injury and reconstruction: A computational study. Journal of Orthopaedic Research, 2022, 40, 1505-1522.	2.3	8
87	Subjectâ€specific biomechanical analysis to estimate locations susceptible to osteoarthritisâ€"Finite element modeling and MRI followâ€up of ACL reconstructed patients. Journal of Orthopaedic Research, 2022, 40, 1744-1755.	2.3	8
88	Early changes in osteochondral tissues in a rabbit model of postâ€traumatic osteoarthritis. Journal of Orthopaedic Research, 2021, 39, 2556-2567.	2.3	7
89	Optical spectroscopic characterization of human meniscus biomechanical properties. Journal of Biomedical Optics, 2017, 22, 1.	2.6	7
90	A musculoskeletal finite element model of rat knee joint for evaluating cartilage biomechanics during gait. PLoS Computational Biology, 2022, 18, e1009398.	3.2	7

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91	Modeling of interstitial fluid movement in soft tissue under negative pressure â€" relevance to treatment of tissue swelling. Computer Methods in Biomechanics and Biomedical Engineering, 2016, 19, 1089-1098.	1.6	6
92	Iterative and discrete reconstruction in the evaluation of the rabbit model of osteoarthritis. Scientific Reports, 2018, 8, 12051.	3.3	6
93	An in silico Framework of Cartilage Degeneration That Integrates Fibril Reorientation and Degradation Along With Altered Hydration and Fixed Charge Density Loss. Frontiers in Bioengineering and Biotechnology, 2021, 9, 680257.	4.1	6
94	Expediting Finite Element Analyses for Subject-Specific Studies of Knee Osteoarthritis: A Literature Review. Applied Sciences (Switzerland), 2021, 11, 11440.	2.5	6
95	In vivo assessment of the passive stretching response of the bicompartmental human semitendinosus muscle using shear-wave elastography. Journal of Applied Physiology, 2022, 132, 438-447.	2.5	6
96	Computational Models of Articular Cartilage. Computational and Mathematical Methods in Medicine, 2013, 2013, 1-2.	1.3	5
97	Optical coherence tomography enables accurate measurement of equine cartilage thickness for determination of speed of sound. Monthly Notices of the Royal Astronomical Society: Letters, 2016, 87, 418-424.	3.3	5
98	Guide to mechanical characterization of articular cartilage and hydrogel constructs based on a systematic in silico parameter sensitivity analysis. Journal of the Mechanical Behavior of Biomedical Materials, 2021, 124, 104795.	3.1	5
99	Structural, compositional, and functional effects of blunt and sharp cartilage damage on the joint: A 9â€month equine groove model study. Journal of Orthopaedic Research, 2021, 39, 2363-2375.	2.3	5
100	Toward Tailored Rehabilitation by Implementation of a Novel Musculoskeletal Finite Element Analysis Pipeline. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2022, 30, 789-802.	4.9	5
101	Dualâ€contrast microâ€CT enables cartilage lesion detection and tissue condition evaluation ex vivo. Equine Veterinary Journal, 2023, 55, 315-324.	1.7	5
102	Rapid X-Ray-Based 3-D Finite Element Modeling of Medial Knee Joint Cartilage Biomechanics During Walking. Annals of Biomedical Engineering, 2022, 50, 666-679.	2.5	5
103	Ultrasound Assessment of Human Meniscus. Ultrasound in Medicine and Biology, 2017, 43, 1753-1763.	1.5	4
104	Changes in subchondral bone structure and mechanical properties do not substantially affect cartilage mechanical responses â€" A finite element study. Journal of the Mechanical Behavior of Biomedical Materials, 2022, 128, 105129.	3.1	4
105	Deformation behaviors and mechanical impairments of tissue cracks in immature and mature cartilages. Journal of Orthopaedic Research, 2022, 40, 2103-2112.	2.3	4
106	Crack propagation in articular cartilage under cyclic loading using cohesive finite element modeling. Journal of the Mechanical Behavior of Biomedical Materials, 2022, 131, 105227.	3.1	4
107	The effect of body configuration on the strain magnitude and distribution within the acetabulum during sideways falls: A finite element approach. Journal of Biomechanics, 2021, 114, 110156.	2.1	3
108	Back-Side Wear in HexLoc Cups Clinico-Radiological, Immunohistopathological, Finite Element, and Retrieval Analysis Studies. Journal of Long-Term Effects of Medical Implants, 2014, 24, 319-331.	0.7	3

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109	Effect of osteoporosis-related reduction in the mechanical properties of bone on the acetabular fracture during a sideways fall: A parametric finite element approach. PLoS ONE, 2022, 17, e0263458.	2.5	3
110	Effect of Impact Velocity, Flooring Material, and Trochanteric Soft-Tissue Quality on Acetabular Fracture during a Sideways Fall: A Parametric Finite Element Approach. Applied Sciences (Switzerland), 2021, 11, 365.	2.5	2
111	Deep Learning Classification of Cartilage Integrity Using Near Infrared Spectroscopy. , 2018, , .		2
112	Clinical Contrast-Enhanced Computed Tomography With Semi-Automatic Segmentation Provides Feasible Input for Computational Models of the Knee Joint. Journal of Biomechanical Engineering, 2020, 142, .	1.3	2
113	Near infrared spectroscopic evaluation of biochemical and crimp properties of knee joint ligaments and patellar tendon. PLoS ONE, 2022, 17, e0263280.	2.5	2
114	Biomechanical, biochemical, and near infrared spectral data of bovine knee ligaments and patellar tendon. Data in Brief, 2021, 36, 106976.	1.0	1
115	Effect of cells on spatial quantification of proteoglycans in articular cartilage of small animals. Connective Tissue Research, 2022, 63, 603-614.	2.3	1
116	Site- and Zone-Dependent Changes in Proteoglycan Content and Biomechanical Properties of Bluntly and Sharply Grooved Equine Articular Cartilage. Annals of Biomedical Engineering, 2022, 50, 1787-1797.	2.5	1
117	Title is missing!. , 2020, 16, e1007998.		0
118	Title is missing!. , 2020, 16, e1007998.		0
119	Title is missing!. , 2020, 16, e1007998.		0