Steven H Collins

List of Publications by Citations

62 papers	4,143 citations	26 h-index	64 g-index
71 ext. papers	5,327 ext. citations	7.1 avg, IF	6.06 L-index

#	Paper	IF	Citations
62	Efficient bipedal robots based on passive-dynamic walkers. *Science*, **2005**, 307, 1082-5	33.3	1243
61	Reducing the energy cost of human walking using an unpowered exoskeleton. *Nature*, **2015**, 522, 212-5	50.4	477
60	Human-in-the-loop optimization of exoskeleton assistance during walking. *Science*, **2017**, 356, 1280-1284	33.3	359
59	Dynamic arm swinging in human walking. *Proceedings of the Royal Society B: Biological Sciences*, **2009**, 276, 3679-88	4.4	226
58	Recycling energy to restore impaired ankle function during human walking. *PLoS ONE*, **2010**, 5, e9307	3.7	124
57	An experimental comparison of the relative benefits of work and torque assistance in ankle exoskeletons. *Journal of Applied Physiology*, **2015**, 119, 541-57	3.7	115
56	The effect of prosthetic foot push-off on mechanical loading associated with knee osteoarthritis in lower extremity amputees. *Gait and Posture*, **2011**, 34, 502-7	2.6	103
55	A universal ankle-foot prosthesis emulator for human locomotion experiments. *Journal of Biomechanical Engineering*, **2014**, 136, 035002	2.1	93
54	Systematic variation of prosthetic foot spring affects center-of-mass mechanics and metabolic cost during walking. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, **2011**, 19, 411-9	4.8	86
53	A simple method for calibrating force plates and force treadmills using an instrumented pole. *Gait and Posture*, **2009**, 29, 59-64	2.6	72
52	Increasing ankle push-off work with a powered prosthesis does not necessarily reduce metabolic rate for transtibial amputees. *Journal of Biomechanics*, **2016**, 49, 3452-3459	2.9	69
51	Two independent contributions to step variability during over-ground human walking. *PLoS ONE*, **2013**, 8, e73597	3.7	64
50	**2015**,		58
49	The influence of push-off timing in a robotic ankle-foot prosthesis on the energetics and mechanics of walking. *Journal of NeuroEngineering and Rehabilitation*, **2015**, 12, 21	5.3	57
48	Prosthetic ankle push-off work reduces metabolic rate but not collision work in non-amputee walking. *Scientific Reports*, **2014**, 4, 7213	4.9	57
47	Once-per-step control of ankle-foot prosthesis push-off work reduces effort associated with balance during walking. *Journal of NeuroEngineering and Rehabilitation*, **2015**, 12, 43	5.3	54
46	Experimental comparison of torque control methods on an ankle exoskeleton during human walking **2015**,		53

45	The effects of a controlled energy storage and return prototype prosthetic foot on transtibial amputee ambulation. *Human Movement Science*, **2012**, 31, 918-31	2.4	53
44	A lightweight, low-power electroadhesive clutch and spring for exoskeleton actuation **2016**,		49
43	Improving the energy economy of human running with powered and unpowered ankle exoskeleton assistance. *Science Robotics*, **2020**, 5,	18.6	48
42	Muscle-tendon mechanics explain unexpected effects of exoskeleton assistance on metabolic rate during walking. *Journal of Experimental Biology*, **2017**, 220, 2082-2095	3	45
41	Ankle fixation need not increase the energetic cost of human walking. *Gait and Posture*, **2008**, 28, 427-33	2.6	39
40	Muscle recruitment and coordination with an ankle exoskeleton. *Journal of Biomechanics*, **2017**, 59, 50-58	2.9	29
39	. *IEEE Transactions on Robotics*, **2017**, 33, 406-418	6.5	26
38	The effects of electroadhesive clutch design parameters on performance characteristics. *Journal of Intelligent Material Systems and Structures*, **2018**, 29, 3804-3828	2.3	26
37	Heuristic-Based Ankle Exoskeleton Control for Co-Adaptive Assistance of Human Locomotion. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, **2019**, 27, 2059-2069	4.8	25
36	A hip□knee□ankle exoskeleton emulator for studying gait assistance. *International Journal of Robotics Research*, **2021**, 40, 722-746	5.7	19
35	Design of a lightweight, tethered, torque-controlled knee exoskeleton. *IEEE International Conference on Rehabilitation Robotics*, **2017**, 2017, 1646-1653	1.3	18
34	An experimental robotic testbed for accelerated development of ankle prostheses **2013**,		16
33	An ankle-foot prosthesis emulator with control of plantarflexion and inversion-eversion torque **2015**,		15
32	Step-to-Step Ankle Inversion/Eversion Torque Modulation Can Reduce Effort Associated with Balance. *Frontiers in Neurorobotics*, **2017**, 11, 62	3.4	15
31	The Passive Series Stiffness That Optimizes Torque Tracking for a Lower-Limb Exoskeleton in Human Walking. *Frontiers in Neurorobotics*, **2017**, 11, 68	3.4	15
30	Optimizing Exoskeleton Assistance for Faster Self-Selected Walking. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, **2021**, 29, 786-795	4.8	15
29	Using force data to self-pace an instrumented treadmill and measure self-selected walking speed. *Journal of NeuroEngineering and Rehabilitation*, **2020**, 17, 68	5.3	12
28	Informing Ankle-Foot Prosthesis Prescription through Haptic Emulation of Candidate Devices. *IEEE International Conference on Robotics and Automation: ICRA: [proceedings]*, **2015**, 2015, 6445-6450	2.2	12

27	An Ankle‐Foot Prosthesis Emulator With Control of Plantarflexion and Inversion‐Eversion Torque. *IEEE Transactions on Robotics*, **2018**, 34, 1183-1194	6.5	11
26	Torque Control in Legged Locomotion ? ?Supplementary document of this chapter is located at https://www.andrew.cmu.edu/user/shc17/Zhang_2016_BLL‐SuppMat.pdf. **2017**, 347-400		11
25	How adaptation, training, and customization contribute to benefits from exoskeleton assistance. *Science Robotics*, **2021**, 6, eabf1078	18.6	11
24	Rapid energy expenditure estimation for ankle assisted and inclined loaded walking. *Journal of NeuroEngineering and Rehabilitation*, **2019**, 16, 67	5.3	9
23	An Ankle-Foot Prosthesis Emulator Capable of Modulating Center of Pressure. *IEEE Transactions on Biomedical Engineering*, **2020**, 67, 166-176	5	9
22	Design of Lower-Limb Exoskeletons and Emulator Systems **2020**, 251-274		8
21	Testing Simulated Assistance Strategies on a Hip-Knee-Ankle Exoskeleton: a Case Study **2020**,		8
20	Stabilization of a three-dimensional limit cycle walking model through step-to-step ankle control. *IEEE International Conference on Rehabilitation Robotics*, **2013**, 2013, 6650437	1.3	7
19	The Effects of Prosthesis Inversion/Eversion Stiffness on Balance-Related Variability During Level Walking: A Pilot Study. *Journal of Biomechanical Engineering*, **2020**, 142,	2.1	5
18	Comparing optimized exoskeleton assistance of the hip, knee, and ankle in single and multi-joint configurations. *Wearable Technologies*, **2021**, 2,	4	4
17	Optimized hip-knee-ankle exoskeleton assistance at a range of walking speeds. *Journal of NeuroEngineering and Rehabilitation*, **2021**, 18, 152	5.3	4
16	Lower limb active prosthetic systems‐overview **2020**, 469-486		4
15	Shortcomings of human-in-the-loop optimization of an ankle-foot prosthesis emulator: a case series. *Royal Society Open Science*, **2021**, 8, 202020	3.3	4
14	Comparing optimized exoskeleton assistance of the hip, knee, and ankle in single and multi-joint configurations		4
13	Sensing leg movement enhances wearable monitoring of energy expenditure. *Nature Communications*, **2021**, 12, 4312	17.4	4
12	Design of a Hip Exoskeleton With Actuation in Frontal and Sagittal Planes. *IEEE Transactions on Medical Robotics and Bionics*, **2021**, 3, 773-782	3.1	4
11	General variability leads to specific adaptation toward optimal movement policies.. *Current Biology*, **2022**,	6.3	4
10	What do walking humans want from mechatronics? **2013**,		3

List of Publications

9	Optimized hip-knee-ankle exoskeleton assistance reduces the metabolic cost of walking with worn loads. *Journal of NeuroEngineering and Rehabilitation*, **2021**, 18, 161	5.3	3
8	Self-selected step length asymmetry is not explained by energy cost minimization in individuals with chronic stroke. *Journal of NeuroEngineering and Rehabilitation*, **2020**, 17, 119	5.3	3
7	The Iterative Learning Gain That Optimizes Real-Time Torque Tracking for Ankle Exoskeletons in Human Walking Under Gait Variations. *Frontiers in Neurorobotics*, **2021**, 15, 653409	3.4	3
6	The energy cost of split-belt walking for a variety of belt speed combinations.. *Journal of Biomechanics*, **2022**, 132, 110905	2.9	1
5	Optimized hip-knee-ankle exoskeleton assistance at a range of walking speeds		1
4	How adaptation, training, and customization contribute to benefits from exoskeleton assistance		1
3	Teleoperation of an Ankle-Foot Prosthesis With a Wrist Exoskeleton. *IEEE Transactions on Biomedical Engineering*, **2021**, 68, 1714-1725	5	1
2	The effects of ground-irregularity-cancelling prosthesis control on balance over uneven surfaces. *Royal Society Open Science*, **2021**, 8, 201235	3.3	1
1	Characterizing the relationship between peak assistance torque and metabolic cost reduction during running with ankle exoskeletons.. *Journal of NeuroEngineering and Rehabilitation*, **2022**, 19, 46	5.3	1