Search Strings and Results of full text review

Search String Google Scholar

> (Unilateral OR Femoral OR Transfemoral OR Above?knee OR Knee?Disarticulation OR Through?knee) AND (Amput* OR Prosth*) AND (microprocessor OR MP*) AND knee AND (low*?mobility OR PAD OR MFCL?2)

Search String Embase, PubMed, Cochrane

> (unilateral OR femoral OR transfemoral OR above?knee OR knee?disarticulation OR through?knee OR 'knee amputation') AND (amput* OR prosth*) AND (microprocessor OR mpk OR mp) AND knee AND ('low mobility' OR mobility OR pad OR mfcl)

Search String CINAHL complete
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> (Unilateral OR Femoral OR Transfemoral OR Above*knee OR Knee*Disarticulation OR Through*knee) AND (Amput* OR Prosth*) AND (microprocessor OR MPK OR MP) AND knee AND (lower*mobility OR low*mobility OR PAD OR MFCL*2)

1211# Title reviews

409# Abstract reviews

48# Full test reviews

List of full text reviewed articles

	Title / Citation		
1	Prinsen EC, Nederhand MJ, Olsman J, Rietman JS.: Influence of a user-adaptive prosthetic knee on quality of life, balance confidence, and measures of mobility: a randomised cross-over trial *Clinical Rehabilitation. 2015;29(6):581-591.* DOI:10.1177/0269215514552033	Not included	No K2 data extractable
2	Fuenzalida Squella, SA; Kannenberg, A; Brandão B, Â: Enhancement of a prosthetic knee with a microprocessor-controlled gait phase switch reduces falls and improves balance confidence and gait speed in community ambulators with unilateral transfemoral amputation *Prosthetics and Orthotics International: April 2018 - Volume 42 - Issue 2 - p 228-* DOI: 10.1177/0309364617716207	Not included	K3 / K4 cohort
3	Möller S, Hagberg K, Smulesson K, Ramstrand N, Perceived self-efficacy and specific self-reported outcomes in persons with lower-limb amputation using a non-microprocessor-controlled versus a microprocessor-controlled prosthetic knee *Disability and Rehabilitation: Assistive Technology 2017* DOI:10.1080/17483107.2017.1306590	Not included	No K2 data extractable
4	Hasenoehrl T, Schmalz T, Windhager R, Domayer S, Dana S, Ambrozy C, Palma S, Crevenna R Safety and function of a prototype microprocessor-controlled knee prosthesis for low active transfemoral amputees switching from a mechanic knee prosthesis: a pilot study *Disability and Rehabilitation: Assistive Technology 2018*	Included	

	DOI:10.1080/17483107.2017.1300344		
5	Hahn A, Lang M, Stuckart C, Analysis of clinically important factors on the performance of advanced hydraulic, microprocessor-controlled exo-prosthetic knee joints based on 899 trial fittings *Medicine (Baltimore) 2016* DOI: 10.1097/MD.0000000000005386	Included	
6	Wong CK, Rheinstein J, Stern MA Benefits for Adults with Transfemoral Amputations and Peripheral Artery Disease Using Microprocessor Compared with Nonmicroprocessor Prosthetic Knees *Physical Medicine and Rehabilitation 2015* DOI: 10.1097/PHM.0000000000000265	Included	
7	Wong CK, Chihuri ST, Li G Risk of fall-related injury in people with lower limb amputations: a prospective cohort study *Journal of Rehabilitation Medicine 2016* DOI: 10.2340/16501977-2042	Not Included	No K2 data extractable
8	Wurdeman SR, Stevens PM, Campbell JH Mobility analysis of amputees (MAAT 3): Matching individuals based on comorbid health reveals improved function for above-knee prosthesis users with microprocessor knee technology *Assistive technology 2020* DOI:10.1080/10400435.2018.1530701	Not Included	No K2 data extractable
9	Lansade C, Vicaut E, Paysant J, Ménager D, Cristina MC, Braatz F, Domayer S, Pérennou D, Chiesa G. Mobility and satisfaction with a microprocessor-controlled knee in moderately active amputees: A multi-centric randomized crossover trial *Annals of Physical and Rehabilitation Medicine 2018* DOI:10.1016/j.rehab.2018.04.003	Included	
10	Prinsen EC, Nederhand MJ, Sveinsdóttir HS, Prins MR, van der Meer F, Koopman HFJM, Rietman JS. The influence of a user-adaptive prosthetic knee across varying walking speeds: A randomized cross-over trial. *Gait & Posture 2017* DOI:10.1016/j.gaitpost.2016.11.015	Not included	No K2 data extractable
11	Hafner BJ, Askew RL Physical performance and self-report outcomes associated with use of passive, adaptive, and active prosthetic knees in persons with unilateral, transfemoral amputation: Randomized crossover trial. *Journal of Rehabilitation Research & Development . 2015* DOI: 10.1682/JRRD.2014.09.0210	Not Included	K3 / K4 cohort
12	Thiele J, Westebbe B, Bellmann M, Kraft M. Designs and performance of microprocessor-controlled knee joints *Biomech. Tech 2014* DOI: 10.1515/bmt-2013-0069	Not Included	No K2 data extractable, no NMPK comparison
13	Mileusnic MP, Hahn A, Reiter S Effects of a Novel Microprocessor-Controlled Knee, Kenevo, on the Safety, Mobility, and Satisfaction of Lower-Activity Patients with Transfemoral Amputation *Journal of Prosthetics and Orthotics 2017* DOI: 10.1097/JPO.0000000000000146	Included	
14	Möller, Saffran, Functioning in prosthetic users provided with and without a microprocessor-controlled prosthetic knee – relative effects on mobility, self-efficacy and attentional demand *PhD Thesis 2019, available on Open ACCESS*	Not included	No K2 data extractable

	http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1306249&dswid=-7048		
15	Highsmith, JM; Kahle, JT.; Wernke, MM; Carey, SL, Miro, RM, Lura, DJ, Sutton, BS, Effects of the genium knee system on functional level, stair ambulation, perceptive and economic outcomes in transfemoral amputees *Technol Innov. 2016 Sep; 18(2-3): 139–150.* DOI: 10.21300/18.2-3.2016.139	Not included	K3 / K4 cohort
16	Hahn A, Lang M.; Effects of Mobility Grade, Age, and Etiology on Functional Benefit and Safety of Subjects Evaluated in More Than 1200 C-Leg Trial Fittings in Germany *Journal of Prosthetics and Orthotics 2015* DOI: 10.1097/JPO.0000000000000064	Included	
17	Cutti AG, Lettieri E, Del Maestro M, Radaelli G, Luchetti M, Verni G, Masella C. Stratified cost-utility analysis of C-Leg versus mechanical knees: Findings from an Italian sample of transfemoral amputees *Journal of Prosthetics and Orthotics International 2016* DOI:10.1177/0309364616637955	Not included	No K2 data extractable
18	Highsmith, JM; Kahle JT.; Lura, DJ, Lewandowski, AL, Quillen, WS, Kim, SH, Stair ascent and ramp gait training with the Genium knee *Technology & Innovation, Number 4, 2013,* DOI:10.3727/194982413X13844488879267	Not included	K3 / K4 cohort
19	Möller, S.: Cortical brain activity of transfemoral or knee-disarticulation prosthesis users performing single and dual-task walking activities *Refers to PhD thesis* http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1306114&dswid=-9071	Not included	No K2 data extractable
20	Morgan SJ, Hafner BJ, Kelly VE The effects of a concurrent task on walking in persons with transfemoral amputation compared to persons without limb loss *Journal of Prosthetics and Orthotics International 2016* DOI:10.1177/0309364615596066	Not included	Unrelated, no MPK, no K-level stratification
21	Kaufman KR, Bernhardt KA, Symms K. Functional assessment and satisfaction of transfemoral amputees with low mobility (FASTK2): A clinical trial of microprocessor-controlled vs. non-microprocessor-controlled knees *Clinical Biomechanics 2018* DOI:10.1016/j.clinbiomech.2018.07.012	Included	
22	Thiele J, Gallinger S, Seufert P, Kraft M, THE GAIT SIMULATOR FOR LOWER LIMB EXOPROSTHESES – OVERVIEW AND FIRST MEASUREMENTS FOR COMPARISON OF MICROPROCESSOR CONTROLLED KNEE JOINTS *Mechanical Engineering Vol. 13, No 3, 2015,*	Not included	Unrelated, no MPK-NMPK comparison, no K2 stratification
23	Highsmith MJ, Kahle JT, Shepard NT, Kaufman KR. The effect of the C-leg knee prosthesis on sensory dependency and falls during sensory organization testing *Technology & Innovation, Number 4, 2013,* DOI:10.3727/194982413X13844488879212	Cited	No K2 data extracable
24	Mileusnic MP, Rettinger L, Highsmith MJ, Hahn A. Benefits of the Genium microprocessor controlled prosthetic knee on ambulation, mobility, activities of daily living and quality of life: a systematic literature review *Disability and Rehabilitation: Assistive technology 2019*	Not included	Review, no new data

	DOI:10.1080/17483107.2019.1648570		
25	Cao W, Yu H, Zhao W, Meng Q, Chen W. The comparison of transfemoral amputees using mechanical and microprocessor- controlled prosthetic knee under different walking speeds: A randomized cross-over trial *Technology and Health Care, 2018* DOI: 10.3233/THC-171157	Not included	No K2 data extractable
26	Morgenroth DC, Roland M, Pruziner AL, Czerniecki JM. Transfemoral amputee intact limb loading and compensatory gait mechanics during down slope ambulation and the effect of prosthetic knee mechanism *Clinical Biomechanics 2018* DOI:10.1016/j.clinbiomech.2018.04.007	Not included	No K2 data extractable
27	Thiele J, Schöllig C, Bellmann M, Kraft M. Designs and performance of three new microprocessor-controlled knee joints *Biomechanical Engineering 2018* DOI:10.1515/bmt-2017-0053	Cited	No K2 data extractable
28	Morgan SJ. Do Microprocessor Knees Improve Outcomes in Early Prosthetic Rehabilitation Compared to Nonmicroprocessor Knees Defence Technical Information Center *Technical Report,15 Sep 2017,14 Sep 2018* https://apps.dtic.mil/dtic/tr/fulltext/u2/1063860.pdf	Cited	No data available
29	Bellmann M, Köhler TM, Schmalz T. Comparative biomechanical evaluation of two technologically different microprocessor-controlled prosthetic knee joints in safety-relevant daily-life situations *Biomedical Engineering 2018* DOI:10.1515/bmt-2018-0026	Not Included	No K2 data extractable
30	Kuhlmann A, Krüger H, Seidinger S, Hahn A. Cost-effectiveness and budget impact of the microprocessor-controlled knee C-Leg in transfemoral amputees with and without diabetes mellitus *Eur J Health Econ 2020* DOI: 10.1007/s10198-019-01138-y	Cited	Cost effective study, modelled on existing data.
31	Carse B, Scott H, Brady L, Colvin J. Evaluation of gait outcomes for individuals with established unilateral transfemoral amputation following the provision of microprocessor controlled knees in the context of a clinical service *Prosthetics and Orthotics International 2021* DOI: 10.1097/PXR.0000000000000016	Not included	No subgroup analyses available
32	Davie-Smith F, Carse B Comparison of patient-reported and functional outcomes following transition from mechanical to microprocessor knee in the low-activity user with a unilateral transfemoral amputation *Prosthet Orthot Int 2021* DOI: 10.1097/PXR.0000000000000017	included	
33	Hafner BJ, Smith DG Differences in function and safety between Medicare Functional Classification Level-2 and -3 transfemoral amputees and influence of prosthetic knee joint control *Journal of rehabilitation research and development 2009* DOI:10.1682/JRRD.2008.01.0007	Included	
34	Kahle JT, Highsmith MJ, Hubbard SL Comparison of nonmicroprocessor knee mechanism versus C-Leg on Prosthesis Evaluation Questionnaire, stumbles, falls, walking tests, stair descent, and knee preference	Included	

	Journal of rehabilitation research and development 2008 DOI: 10.1682/jrrd.2007.04.0054		
35	Theeven P, Hemmen B, Rings F, Meys G, Brink P, Smeets R, Seelen H Functional added value of microprocessor-controlled knee joints in daily life performance of Medicare Functional Classification Level-2 amputees *Journal of Rehabilitation Medicine 2011* DOI: 10.2340/16501977-0861	Included	
36	Kannenberg A, Zacharias B, Pröbsting E. Benefits of microprocessor controlled prosthetic knee joints to limited community ambulators: A systematic review. *PM&R 2014* DOI: 10.1682/JRRD.2014.05.0118	Cited	Base reference
37	Kuhlmann A, Hagberg K, Kamrad I, Ramstrand N, Seidinger S, Berg H,. PMD3 A Microprocessor-Controlled Prosthetic Knee Compared to NON-Microprocessor-Controlled Knees in Individuals Aged over 65 in Sweden: A Cost-Effectiveness and Budget-IMPACT Analysis *Value in Health 2020* DOI: 10.1016/j.jval.2020.08.1036	Cited	Cost effective study, modelled on existing data.
38	Wetz HH, Hafkemeyer U, Drerup B The influence of the C-leg knee-shin system from the Otto Bock Company in the care of above-knee amputees: A clinical-biomechanical study to define indications *Orthopade 2005* DOI: 10.1007/s00132-005-0783-z	Not Included	insufficient quantification
39	Burnfield JM, Eberly VJ, Gronely JK, Perry J, Yule WJ, Mulroy SJ. Impact of stance phase microprocessor-controlled knee prosthesis on ramp negotiation and community walking function in K2 level transfemoral amputees. *Prosthetics and Orthotics International. 2012* DOI: 10.1177/0309364611431611	Included	
40	Eberly VJ, Mulroy SJ, Gronley JK, Perry J, Yule WJ, Burnfield JM. Impact of a stance phase microprocessor-controlled knee prosthesis on level walking in lower functioning individuals with a transfemoral amputation. *Prosthetics and Orthotics International. 2012* DOI: 10.1177/0309364613506912.	Included	
41	Gerzeli S, Torbica A, Fattore G. Cost utility analysis of knee prosthesis with complete microprocessor control (C-leg) compared with mechanical technology in trans-femoral amputees. *Eur J Health Econ 2009 10 (1), S. 47–55.* DOI: 10.1007/s10198-008-0102-9.	Cited	No K2 data extracable
42	Hafner BJ, Willingham LL, Buell NC, Allyn KJ, Smith DG. Evaluation of Function, Performance, and Preference as Transfemoral Amputees Transition from Mechanical to Microprocessor Control of the Prosthetic Knee. *Archives of Physical Medicine and Rehabilitation 2007 88 (2), S. 207–217* DOI: 10.1016/j.apmr.2006.10.030	Cited	No K2 data extracable
43	Theeven PJ, Hemmen B, Geers RP, Smeets RJ, Brink PR, Seelen HA. Influence of prosthetic knee joints on perceived performance and everyday life activity level of low-functional persons with a transfemoral amputation or knee disarticulation. *J Rehabil Med. 2012* DOI: 10.2340/16501977-0969	Included	
44	Jayaraman C, Mummidisetty CK, Albert MV, Lipschutz R, Hoppe-Ludwig S, Mathur G, Jayaraman A.	Included	

	Using a microprocessor knee (C-Leg) with appropriate foot transitioned individuals with dysvascular transfemoral amputations to higher performance levels: a longitudinal randomized clinical trial *Journal of NeuroEngineering and Rehabilitation 2021* DOI:10.1186/s12984-021-00879-3		
45	Bellmann M, Köhler TM, Schmalz T. Comparative biomechanical evaluation of two technologically different microprocessor-controlled prosthetic knee joints in safety-relevant daily-life situations. *Biomedical Engineering / Biomedizinische Technik (Berl) 2019* DOI: 10.1515/bmt-2018-0026.	Not included	No subgroup analysis
46	Klute GK, Berge JS, Orendurff MS, Williams RM, Czerniecki JM. Prosthetic intervention effects on activity of lower-extremity amputees. *Archives of Physical Medicine and Rehabilitation 2006* DOI: 10.1016/j.apmr.2006.02.007.	Not included	K3 (no subgroups)
47	Bell EM, Pruziner AL, Wilken JM, Wolf EJ. Performance of conventional and X2® prosthetic knees during slope descent. *Clinical biomechanics (Bristol, Avon) 2016* DOI: 10.1016/j.clinbiomech.2016.01.008.	Not included	Exo-prosthetics not related
48	Orendurff MS Literature review of published research investigating microprocessor-controlled prosthetic knees: 2010–2012 *Journal of Prosthetics and Orthotics 2013* DOI: 10.1097/JPO.0b013e3182a8a922	Not include	No subgroup analysis