

ottobock.

**C-Leg.**  
Main clinical  
takeaways.




Information for professionals

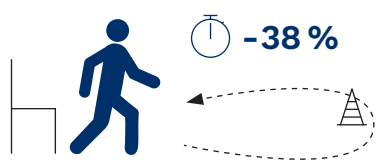


# Main clinical takeaways.

More than 70 clinical studies, reports, and reviews investigated the **C-Leg** micro-processor controlled prosthetic knee. Compared with non-microprocessor knees (NMPKs), the **C-Leg** was shown to enhance safety, improve mobility, and increase patient confidence and satisfaction. The following paragraphs outline the clinical proven outcomes for **C-Leg** use compared to (NMPKs).

## Safety.

Nearly 9 out of 10 **C-Leg** users reported reduced fear of falling. This confidence is well placed, considering **C-Leg** users experience up to 59 % fewer stumbles, up to 80 % fewer falls, and are up to 65 % less likely to be injured by a fall.


Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient stumbles repeatedly	<ul style="list-style-type: none"><li>Reduced number of stumbles <sup>(2, 12)</sup></li></ul>  <p>Number of stumbles: <b>Up to 59 % less stumbles</b></p>
Patient falls repeatedly	<ul style="list-style-type: none"><li>Reduced falls <sup>(1-4, 7, 12)</sup></li></ul>  <p><b>80 %</b></p> <p>Number of falls: <b>Up to 80 % reduction in falls</b></p>
Patients stumbles and falls repeatedly and has fear of falling	<ul style="list-style-type: none"><li>Reduced injurious falls with <b>C-Leg</b> <sup>(13)</sup></li></ul>  <p><b>- 65 %</b></p> <p>Injurious falls: <b>Up to 65 % reduction in users with injurious falls, C-Leg was the best of the 4 MPKs tested</b></p>

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patients stumbles and falls repeatedly and has fear of falling	<ul style="list-style-type: none"> <li>Significant improvements in balance and indicators for a reduced risk of falling, such as TUG, ABC, forces perturbations in gait lab <sup>(3, 10, 14)</sup></li> </ul> <div data-bbox="597 1166 973 1332">  <p><b>-38 %</b></p> </div> <div data-bbox="1024 1213 1417 1309"> <p>Risk of falls:</p> <p><b>Up to 38 % reduction in completion time for the TUG</b></p> </div> <div data-bbox="700 1380 871 1570">  </div> <div data-bbox="1024 1428 1434 1523"> <p>Balance and risk of falls:</p> <p><b>Up to 52 % increased Activity specific Balance Confidence scores</b></p> </div>
	<ul style="list-style-type: none"> <li>Decreased fear of falling <sup>(6, 14)</sup></li> </ul> <div data-bbox="700 1666 871 1856">  </div> <div data-bbox="1024 1713 1383 1808"> <p>Fear of falling:</p> <p><b>Up to 89 % of subjects reported decreased fear of falling</b></p> </div>



Functions and activities – level walking, stairs and ramps.

Compared to NMPKs, **C-Leg** users walk up to 25 % faster on level ground, up to 21 % faster on uneven ground, and up to 40 % faster descending ramps. Most **C-Leg** users (95 %) improved their overall gait symmetry and 67 % of users showed improvements in the quality of stair descending.


Level walking

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient has limited mobility	<div><div><div>● Increased mobility level <sup>(1-4)</sup></div><div></div><div>Mobility grade: <b>Up to 50 % of subjects improved to MG3 from MG2 with MPKs (including C-Leg)</b></div><div>Mobility grade: <b>Up to 22 % of subjects improved to MG4 from MG3 with MPKs (including C-Leg)</b></div></div></div>
	<div><div><div>● Improved walking velocity <sup>(2-4)</sup></div><div></div><div>Walking speed level ground: <b>Up to 25 % faster walking speed on level ground</b></div></div></div>
	<div><div><div>● Up to <b>14%</b> increase in walking distance during 2-min walking test in MFCL2 subjects <sup>(5)</sup></div></div></div>
Patient has gait asymmetry	<div><div><div>● Improved gait symmetry <sup>(6)</sup></div><div></div><div>Gait pattern: <b>Up to 95 % of subjects improved gait symmetry</b></div></div></div>


Stairs

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient has difficulties descending stairs with reciprocal gait (step-over-step)	<div><div><ul style="list-style-type: none"><li>Improved mobility <sup>(1)</sup> and quality of stair descent <sup>(1-3, 7, 8)</sup></li></ul></div><div><p>Quality stair descent: <b>Up to 67 %</b> of subjects improved their stair descent quality</p><p>↓</p><p><b>Improvements in quality of stair descent towards natural reciprocal gait pattern</b> (from step-to to step-over-step)</p></div></div>

Ramps

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient has difficulties negotiating slopes/hills	<div><div><ul style="list-style-type: none"><li>Improved walking velocity on ramps <sup>(1, 3, 7, 9, 10)</sup></li></ul></div><div><p>Walking speed ramp: <b>Up to 40 %</b> faster walking speed for ramp descent</p></div></div>


Uneven Terrain/ Obstacles

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient has difficulties negotiating uneven terrain and obstacles	<div><div><ul style="list-style-type: none"><li>Improved walking velocity on uneven ground <sup>(2, 3, 7, 11)</sup></li></ul></div><div><p>Velocities uneven ground: <b>Up to 21 %</b> faster walking speed on uneven ground</p></div></div>


## Functions and activities – cognitive demand and energy.

With **C-Leg**, most users (94 %) reported increased capability for divided attention and up to 88 % of users experienced less effort during walking.

### Cognitive demand

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient has difficulties with dual task while walking	<ul style="list-style-type: none"><li>Improved multitasking while walking <sup>(6)</sup></li></ul>  <p>Multitasking: <b>Up to 94% of users reported increased capability to divide attention while walking</b></p> <ul style="list-style-type: none"><li>Up to <b>28%</b> decreased difficulty of multitasking <sup>(7)</sup></li><li>Less cortical brain activity while walking with MPK (including <b>C-Leg</b>) <sup>(15)</sup></li></ul>

### Energy

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient has limitations with walking effort and energy consumption	<ul style="list-style-type: none"><li>Reduced walking effort <sup>(6)</sup></li></ul>  <p>Walking effort: <b>Up to 88 % of C-Leg users reported reduced walking effort</b></p> <ul style="list-style-type: none"><li>Up to <b>7 %</b> reduced oxygen consumption with various speeds (slow, medium and fast walking speed) <sup>(11, 16, 17)</sup></li></ul>


Functions and activities – activity, mobility and ADLs.

Up to 23 % of the **C-Leg** users reported a reduced use of walking aids.  
Further **C-Leg** users were able to complete ADLs 11 % faster and improved the performance by 33 %.

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient needs walking aids	<ul style="list-style-type: none"><li>Up to <b>23 %</b> of subjects reported reduction in walking aid use <sup>(6)</sup></li></ul>
Difficulties with performing activities of daily living	<ul style="list-style-type: none"><li>Up to <b>11 %</b> decreased time needed to complete ADLs including standing <sup>(18)</sup></li><li>Up to <b>33 %</b> improved performance in ADLs (including standing, sitting down ...) <sup>(3, 18)</sup></li></ul>

Participation – preference and satisfaction.

The **C-Leg** was preferred by 90 % of users over NMPKs.

Mobility needs or deficient of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient is not satisfied with fitting	<ul style="list-style-type: none"><li>Up to <b>38 %</b> increased Prosthetic Evaluation Questionnaire (PEQ) satisfaction score in MFCL3 and up to 21% improved in MFCL2 <sup>(1)</sup></li><li>Increased preference for <b>C-Leg</b> <sup>(7, 18 – 20)</sup></li></ul> <div><p>Preference: <b>Up to 90 % of subjects prefer C-Leg over NMPKs</b></p></div>

More details can be found  
in the study summaries



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