

A man with a prosthetic knee is standing on a rooftop at dusk. He is wearing a dark blue cardigan over a white t-shirt and grey shorts. He is looking to the right. The background shows a city skyline with lit-up buildings under a dark blue sky. The man's prosthetic knee is visible, and he is wearing dark sneakers with white laces.

ottobock.




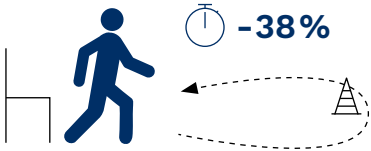


# **C-Leg.** Main clinical takeaways.

**C-Leg is the world's most studied prosthetic device.**

More than 70 clinical studies, reports, and reviews investigated the **C-Leg** microprocessor 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 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>
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>  <p><b>-38%</b></p> <p>Risk of falls: <b>Up to 38% reduction in completion time for the TUG</b></p>  <p>Balance and risk of falls: <b>Up to 52% increased Activity specific Balance Confidence scores</b></p> <ul style="list-style-type: none"> <li>Decreased fear of falling <sup>(6, 14)</sup></li> </ul>  <p>Fear of falling: <b>Up to 89% of subjects reported decreased fear of falling</b></p>



## 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 of the patient	Evidence for benefits of the C-Leg compared to NMPKs
Patient has limited mobility	<ul style="list-style-type: none"> <li data-bbox="502 604 790 638">● Increased mobility level <sup>(1-4)</sup></li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="651 656 802 806"> </div> <div data-bbox="981 689 1412 779"> <p>Mobility grade: <b>Up to 50% of subjects improved to MG3 from MG2 with MPKs (including C-Leg)</b></p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div data-bbox="651 835 802 985"> </div> <div data-bbox="981 846 1412 936"> <p>Mobility grade: <b>Up to 22% of subjects improved to MG4 from MG3 with MPKs (including C-Leg)</b></p> </div> </div>
	<ul style="list-style-type: none"> <li data-bbox="502 1041 821 1075">● Improved walking velocity <sup>(2-4)</sup></li> </ul> <div style="display: flex; justify-content: center; align-items: center; margin-top: 20px;"> <div data-bbox="571 1131 882 1272"> </div> <div data-bbox="981 1160 1364 1249"> <p>Walking speed level ground: <b>Up to 25% faster walking speed on level ground</b></p> </div> </div> <ul style="list-style-type: none"> <li data-bbox="502 1344 1412 1377">● Up to <b>14%</b> increase in walking distance during 2-min walking test in MFCL2 subjects <sup>(5)</sup></li> </ul>
	Patient has gait asymmetry


## Stairs

Mobility needs of the patient	Evidence for benefits of the C-Leg compared to NMPKs
<p>Patient has difficulties descending stairs with reciprocal gait (step-over-step)</p>	<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 style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: right;"> <p>Quality stair descent:  <b>Up to 67% of subjects improved their stair descent quality</b></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 of the patient	Evidence for benefits of the C-Leg compared to NMPKs
<p>Patient has difficulties negotiating slopes/hills</p>	<ul style="list-style-type: none"> <li>Improved walking velocity on ramps <sup>(1, 3, 7, 9, 10)</sup></li> </ul> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: right;"> <p>Walking speed ramp:  <b>Up to 40% faster walking speed for ramp descent</b></p> </div> </div>


## Uneven Terrain/ Obstacles

Mobility needs of the patient	Evidence for benefits of the C-Leg compared to NMPKs
<p>Patient has difficulties negotiating uneven terrain and obstacles</p>	<ul style="list-style-type: none"> <li>Improved walking velocity on uneven ground <sup>(2, 3, 7, 11)</sup></li> </ul> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: right;"> <p>Velocities uneven ground:  <b>Up to 21% faster walking speed on uneven ground</b></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 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: Up to <b>94%</b> of users reported increased capability to divide attention while walking</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 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: Up to <b>88%</b> of C-Leg users reported reduced walking effort</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 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 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 style="text-align: center;">  <p>Preference: <b>Up to 90%</b> of subjects prefer <b>C-Leg</b> over NMPKs</p> </div>

More details can be found  
in the study summaries



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