Human Need

- Stroke ~ 4.7 million US
- Spinal Cord Injury ~ 200 Thousand US
- Multiple Sclerosis ~ 400 Thousand US
- Cerebral Palsy ~ 100 Thousand US
- Post Polio ~ 1 million US
- Amputation ~ 1.5 million US

National Stroke Association
National Spinal Cord Injury Database
Multiply Sclerosis society
National Center on Birth Defects
World Health Organization
National Limb Loss Information Center
# Amputee Patient Numbers

24 April 2007

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>Unilateral LE</td>
<td>348</td>
</tr>
<tr>
<td>Bilateral LE</td>
<td>96</td>
</tr>
<tr>
<td>Unilateral UE</td>
<td>114</td>
</tr>
<tr>
<td>Bilateral UE</td>
<td>6</td>
</tr>
<tr>
<td>Combined UE/LE</td>
<td>16</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>579</strong></td>
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<tbody>
<tr>
<td>Total LE Limbs Lost</td>
<td>560</td>
</tr>
<tr>
<td>Total UE Limbs Lost</td>
<td>144</td>
</tr>
<tr>
<td>Total Limbs Lost</td>
<td>704</td>
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</tbody>
</table>
The MIT Biomechatronics Group

Muscle Biomechanics & Control

Organismal Biomechanics & Control

Human Rehabilitation & Augmentation Technology
The Rheo: Magnetorheological Knee Prosthesis

Variable-Damping
Metabolic Cost of Ambulation

Rudy Garcia
The Center for Restorative and Regenerative Medicine

Illustration by Bryan Christie

Illustration by Bryan Christie
Active Ankle-Foot Prosthesis
Ankle Dorsi/Plantar Flexion Power

Power (W/kg)

Percent Gait Cycle

0.55 ± 0.11 m/s
0.96 ± 0.16 m/s
1.26 ± 0.16 m/s
1.81 ± 0.18 m/s