

Total Toe – The foot expander

Training device for diabetics

Invention

Every year, there are 30,000 foot amputations in Germany due to diabetes. Total Toe could greatly reduce that number.



Training device for strengthening short and long toe musculature. Starting position (top) and end position (bottom). The toes are pressed down against the pulling resistance of the rubber cords (shown here in green). There are a variety of rubber cord resistances, and the cords can be replaced as training progresses. Nine levels of difficulty are available.

toe-bending musculature in physically active individuals. Clinical utility was documented in examinations of diabetic patients. The device is already patented under DE 10 2014 113 458 B3. Multiple prototypes have been created from aluminum, wood, and plastic. The training device dimensions are available as CAD data, so individual parts can be milled, cut, or lasered from a number of materials (aluminum, plastic, wood) with fully automatic systems. Pull direction, material properties, and rubber cord manufacture make the device special. The training device was chosen for first place in the "Technologies for Healthy Movement" innovation competition at the German Sport University Cologne by an external panel of expert judges.

On behalf of the German Sport University Cologne, we are offering interested companies the opportunity to license this technology and cooperate with the inventors in its refinement.

An invention of the German Sport University Cologne.

The affordable training device suitable for easy home use builds up toe musculature in a targeted manner. Regular training counteracts muscle deterioration in diabetics and reduces peak pressure under the foot during walking. Weekly training with Total Toe starting at diagnosis maintains mobility and quality of life for patients with diabetic foot syndrome: The goal is to prevent problematic ulceration and resulting foot amputation. Another benefit is significant reduction of treatment costs for complications from diabetic foot syndrome. The solution comes from the German Sport University Cologne.

Commercial Opportunities

Many people are affected: Of the eight million diabetics in Germany, 1.5 to 2.7 million develop diabetic foot syndrome, which involves deterioration of the foot musculature, causing the pressure under the foot to increase, the skin to open, and wounds to heal poorly and tend towards infection. This leads to more than 30,000 amputations each year, with severe effects on both health system finances and the social situation of those affected. No comparable device is available on the market.

Current Status

Development proceeded from a number of scientific studies on strength ability and functional adaptation of

Competitive Advantages

- Clinical utility documented
- Patented invention
- CAD production data available
- Simple handling

Technology Readiness Level

123456789

Technology validated in lab

Industries

- Medical device
- Medical technology
- Therapy and training device

Ref. No.

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Contact

Martin van Ackeren

E-Mail: ma@provendis.info

Phone: +49(0)208-94105-34

