

Mobility Clinic Online –
Össur Running Solutions for All
Mobilities

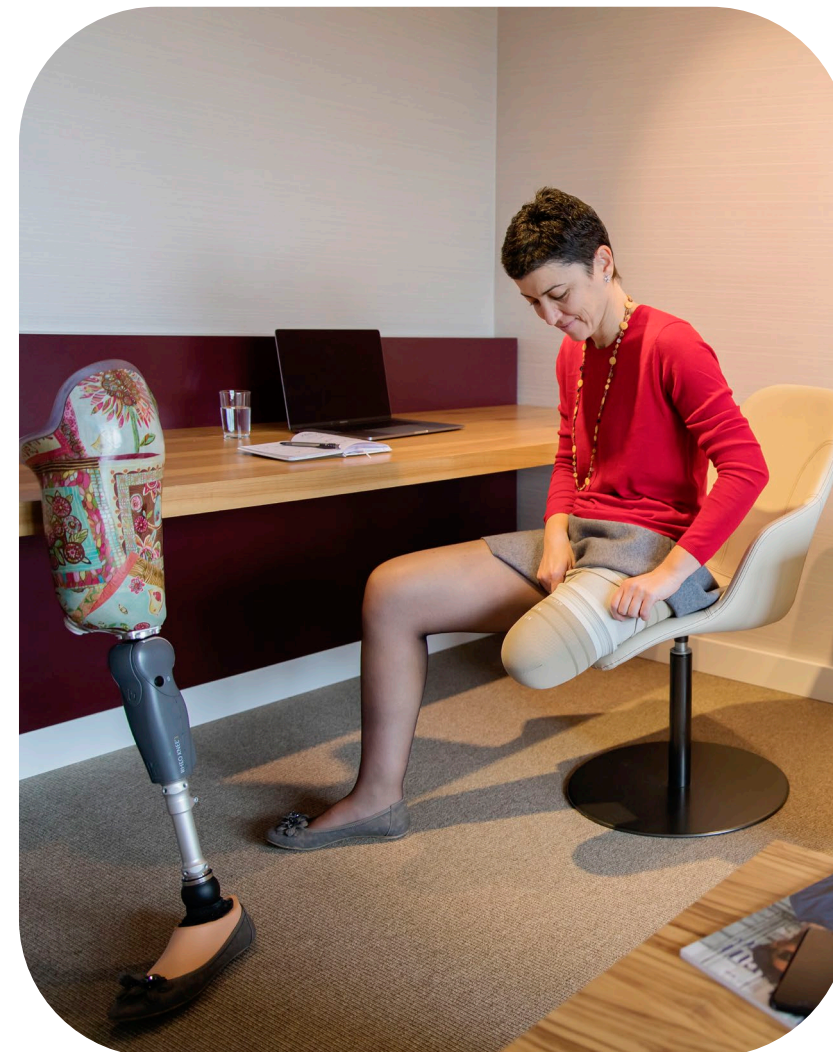
Lizzie Carey
May 2020

Ready to Get Active

Recreational activities e.g. golf, bowling, walking/hiking,
Higher impact sports e.g. basketball, football etc.

Clinical team review:

- Check up with your prosthetist
 - prior to beginning any high impact activity to ensure that your prosthesis is fitting/functioning optimally.
- Check up with your physio
 - for physical upgrading program to improve your strength, balance and prosthetic control so that you can successfully transition into your chosen activity without risk of injury.
- A check up with your GP
 - prior to commencing cardiovascular exercise for those over 45.





Not being able to run is perceived as the most limiting factor when amputees compare with able bodied



Running is a prerequisite for most sport activities

Mobility At All Ages

For a child with limb deficiency;
Involvement in sport and recreational activities provides an important mechanism for development of motor **coordination**, **integration** with peer groups, and **adjustment** to physical difference.

Anderson et al, 1991

Even for the less active amputee, the ability to run could be **useful in an emergency**.

Thomas, 1998



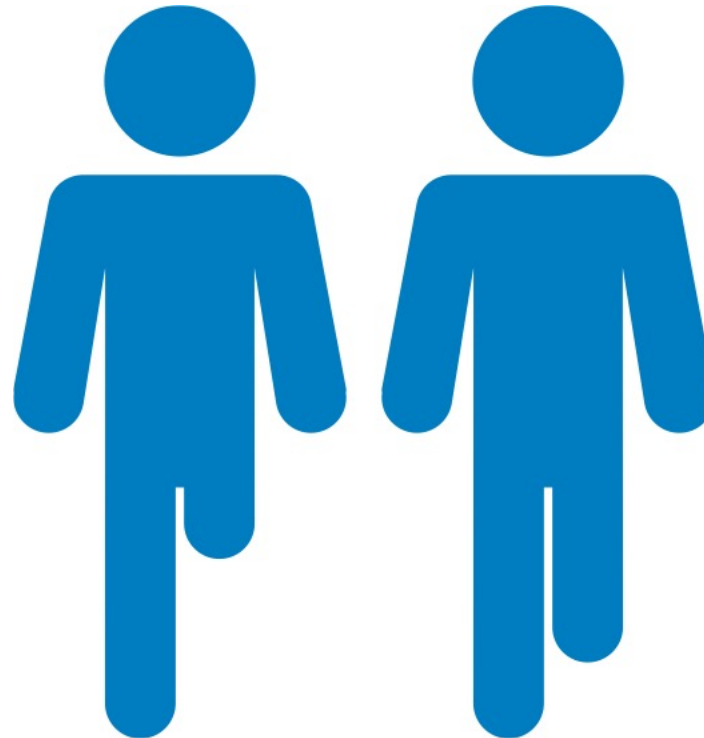
Prosthetic Feet – Prosthetist's Prescription

Body weight

Activity level

Impact level

What other components are used
(e.g. prosthetic knee)



Build Height
(Distance from end of limb to floor)

Pro-Flex[®] XC and Pro-Flex[®] XC Torsion

Designed to provide users needing for a cross over foot for **everyday use and recreational activities** with a natural and smooth walk.

- Torsion ball provides additional shock absorption and **allows the foot to rotate** reducing stress on your residual limb.



Torsion

Reducing socket pressures during walking

- When we walk our shoulders and hips rotate
- Each joint in the legs absorbs some rotation
- More joints amputated = less natural rotation can occur

Also beneficial for sports that require you to change direction quickly

- e.g. Basketball

Some sports put more rotational forces on your limb

- e.g. Golf



Pro-Flex® LP and Pro-Flex® LP Torsion

Pro-Flex LP offers **greater ankle range of motion** than other feet with low build height and a **powerful push off**

- Torsion ball provides additional **shock absorption** and **rotation** to reduce stress on your residual limb
- **Natural** and smooth walk



Pro-Flex[®] LP



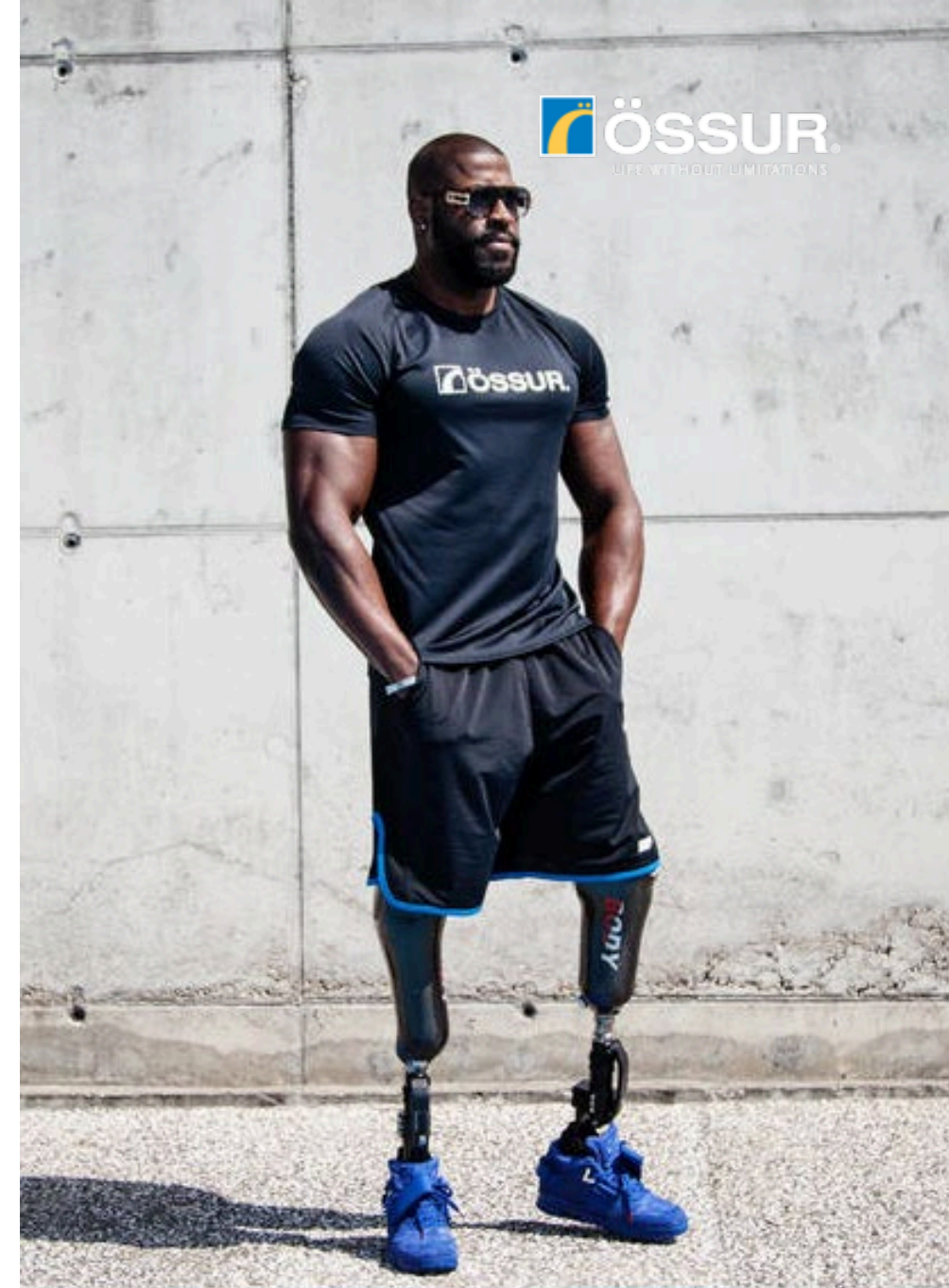
Re-Flex Shock™

Very shock absorbing foot designed for high energy return during walking as well as running/sports

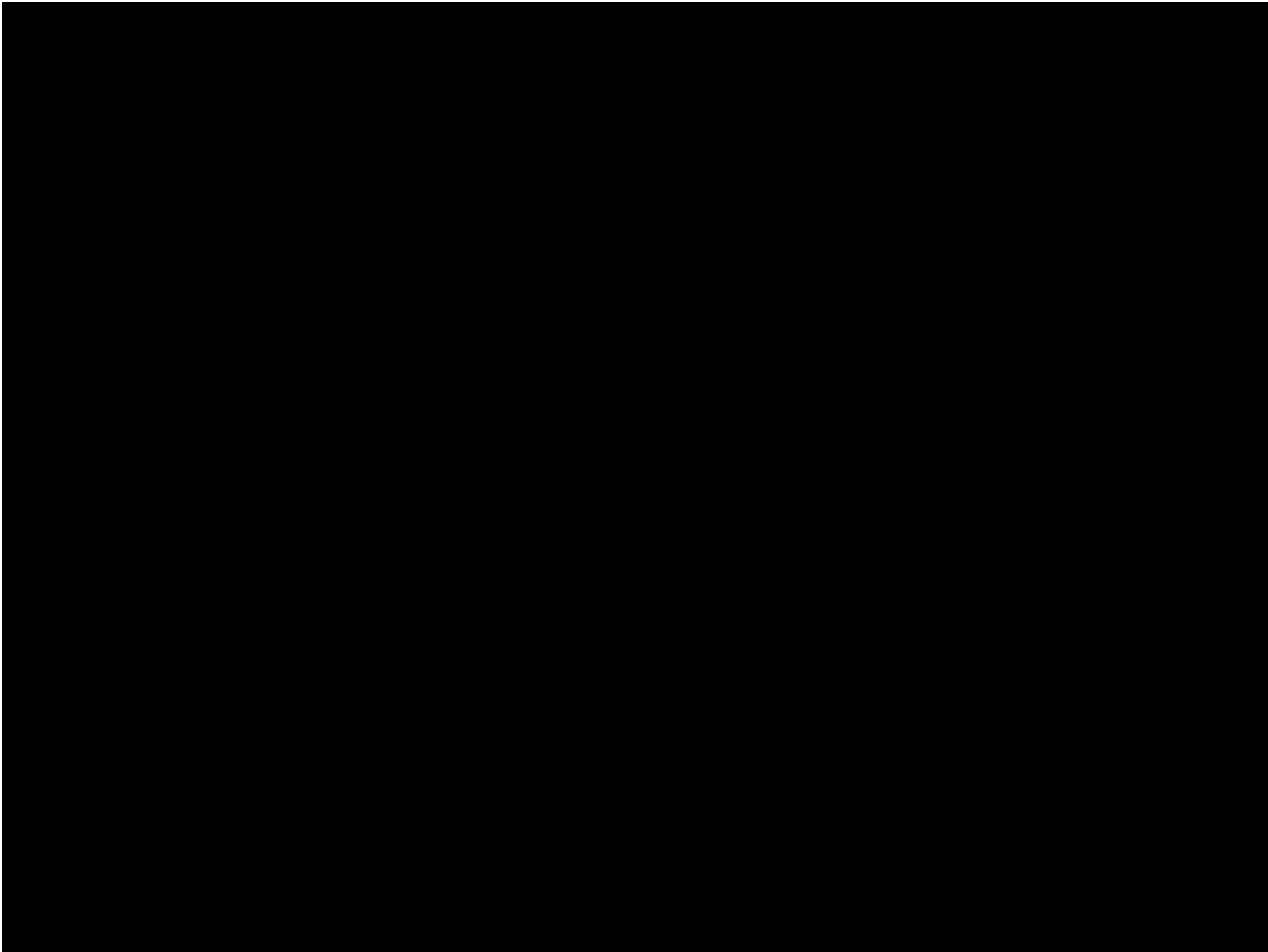
Everyday walking

High impact activities- sports/running

- Shock absorber unit to cushion impact
- High energy return
- Split blade for balance on uneven ground



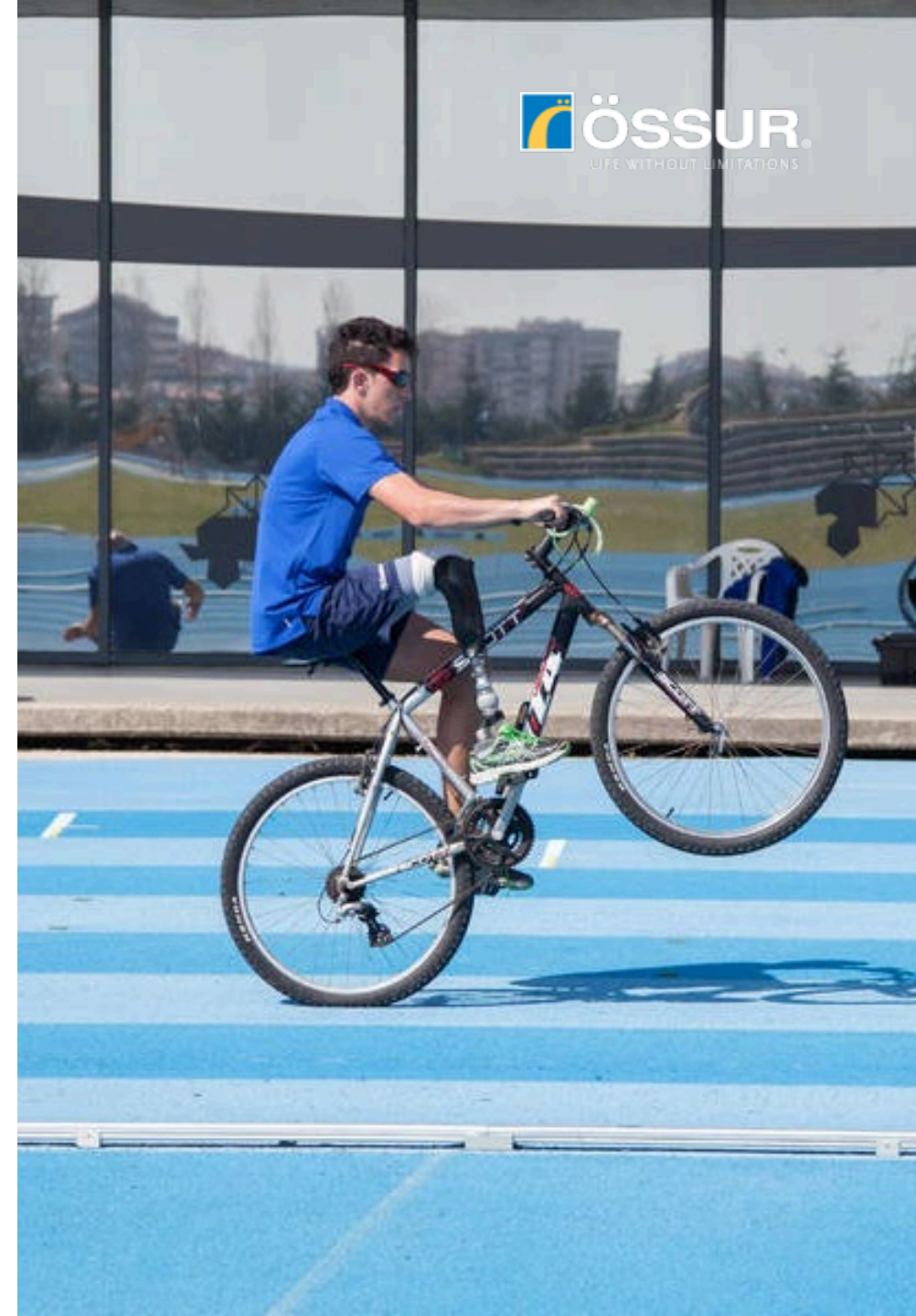
Darryl - Taekwondo



Re-Flex Rotate™

All-rounder foot designed for recreational sports and everyday use all in one prosthesis

- **Torsion** unit **reduces socket pressures** by enabling the foot to stay on the ground whilst the socket rotates.
- Also provides some **shock absorption** to cushion impact



Cheetah[®] Xplore

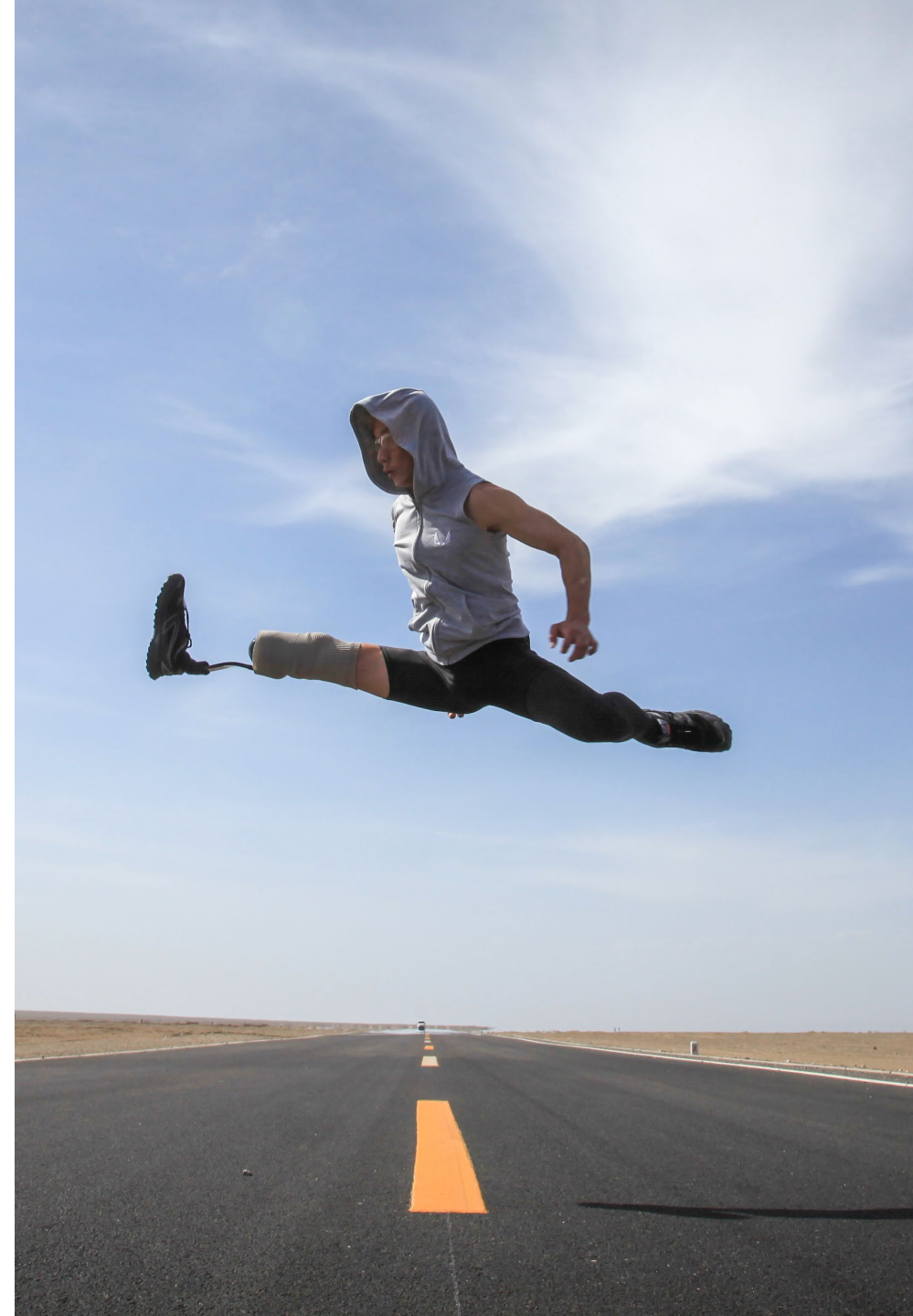
All-rounder foot designed for running and everyday use all with the one prosthesis

Easier to change direction/speed due to the curved blade with the added heel providing stability

- Attached directly to the back of the socket
- Lightweight
- Waterproof



WATERPROOF





The metabolic cost of ambulation is significantly higher in lower extremity amputees than in nonamputees

Johansson et. al., 2005





Considerations

Effect of recreation on their residual limb:

- Soaked with perspiration
- Pain
- Sores
- Fatigue
- Swelling
- Cramping

Kegal et al, 1980

The intact limb of the transfemoral amputee experiences higher impact loads and higher work demands compared to the prosthetic side and non-amputee's limbs

Czerniecki 1996



Higher Activity/Sports Prosthetics



Requirements for high impact activities and/or sports prosthetics

- Good residual limb health
- Interface between socket and skin
- Socket Fit
- Prosthetic Knee (TF/KD/HD)
- (Sport) Prosthetic foot
- Training

Limb Care -

Daily cleaning of the residual limb and interface is **essential**.

- Use a mild fragrance/dye free liquid soap.
- If skin is dry, apply a fragrance/dye free lotion at night after showering to nourish and soften the skin.

Liner Cleaning Guidance

- Remove the liner and turn inside out
- Use a mild fragrance/dye free liquid soap
- After washing, rinse the liner thoroughly with warm water and pat dry on both sides with a lint-free cloth.
- Dry with fabric side outside

See your Prosthetist if you're getting sores/wounds from the increased activity.



Interface

The single **most critical aspect** of any prosthesis is the **quality of the interface** between the residual limb and the prosthesis.

Marks & Michael (2001)

Liner materials such as **silicone**, often are recommended for patients who are entering athletic activity or who have skin conditions, such as grafting and adherences, that reduce the ability to accept shear.

Ferguson et al, 1999



Transtibial Interfaces

- Silicone liners provide:
 - Cushioning
 - Protection against rubbing and blistering
 - Optimal Suspension
- Liner options:
 - Seal-in X®
 - Seal-in V®
 - Cushion liners with Knee Sleeve
 - Iceross Sport Locking®
 - Seal-In X® Locking
- Socks
 - Some sweat absorption



Early Days...



Socket Suspension

Suspension systems are designed to prevent your prosthesis falling off and reduce movement inside the socket.

- Rotation
 - Twisting within the socket
- Pistoning/Shear
 - Moving up and down within the socket
- Liners
 - Locking
 - Cushion
 - Seal-In
- Socket with panels or removable lining
- Harness/Straps



Socket Suspension

- Preferred method for running is suction
- Cushion liner with flexible inner socket
- Expulsion valve
- Suspension Sleeve



Iceross®
Activa



Iceross®
Sleeve



Icelock® Expulsion
Valve 551



Socket Suspension

- Preferred method for running is suction
- Cushion liner with flexible insert
- Expulsion valve
- Suspension Sleeve

Important factors

- + Creates a sealed system (suction)
- + Helps support the knee
- Can reduced range of motion (bending knee)
- When punctured suction is lost



Socket Design

Socket fit is vital to optimise proprioception and control

- Critical in avoiding breakdown of tissue and maintaining comfort

Forces increase as you run/get active

- up to **3 x body weight**

- Socket design considerations:

- Total surface bearing
- Suction suspension
- Flexible inner socket
- Lower posterior trim lines for range of motion



Prosthetic Knees

Knees suitable for sports need to allow for **variable speeds** and are able to swing the foot through in time for you to land on the limb safely.

e.g. Hydraulic knees or MPKs

Knee Options:

- Cheetah Knee®
- Total Knee
- OH7™
- PASO™
- Rheo Knee XC®

Webster J.B. et al. 2001



Hop-Skip Running



PASO Knee: Walking



PASO Knee: Running



Rheo Knee XC (MPK)



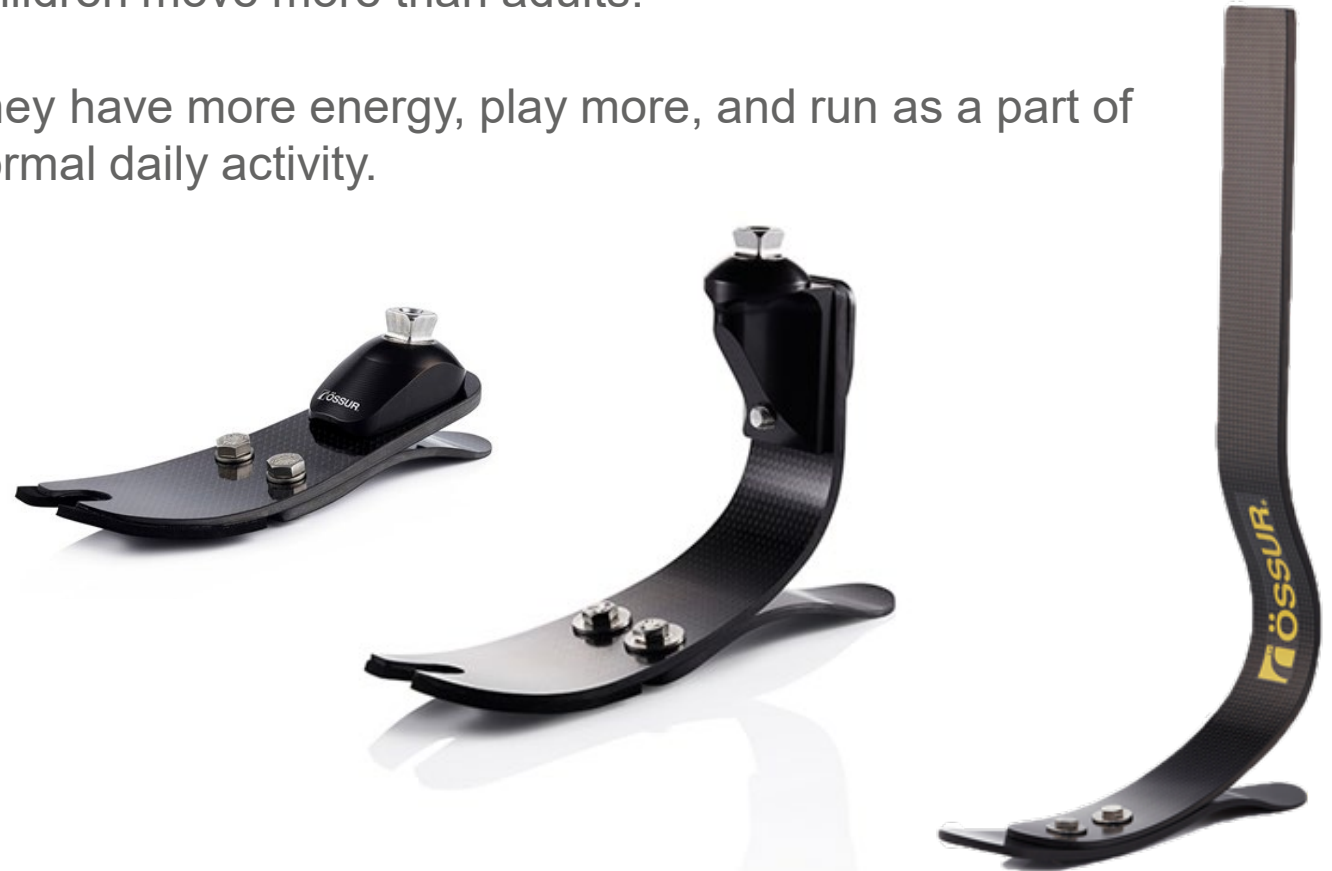


Paediatric Prosthetics

Children are more active than adults

Children move more than adults.

They have more energy, play more, and run as a part of normal daily activity.



Cheetah Xplore Junior



WATERPROOF

For children that require the flexibility of an everyday walking foot and a running foot in a single prosthesis.

Cheetah Xplore couples the proven performance of our Cheetah sprinting foot with a heel

Having a heel improves balance

Great for multi-directional sports

- e.g. netball, football, basketball

Great for water sports

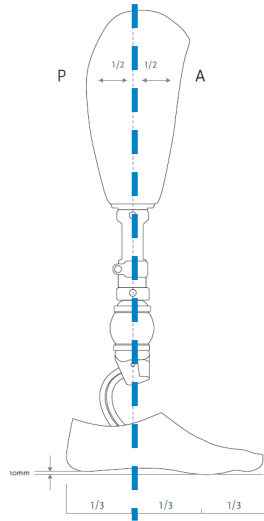




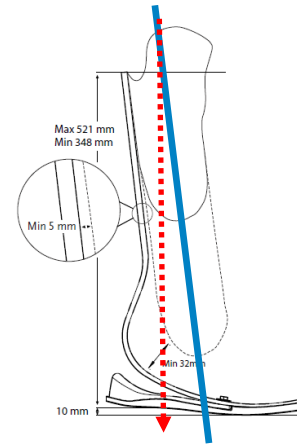
Sports Prosthetics

RUNNING PROSTHETICS

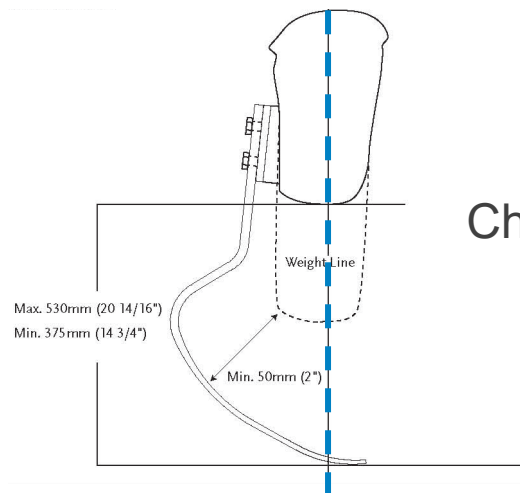




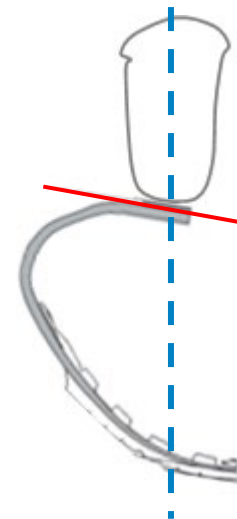
Flex-Foot



Cheetah Xplore



Cheetah Xtreme



Flex-Run

Flex-Run

Shock absorbing running blade with replaceable Nike sole

The ultimate long distance running/jogging foot

5km – Marathon running

Often used in other sports such as Badminton

Speak to your Prosthetist to
organise a trial



Flex-Run with Nike Sole



Cheetah[®] Xtreme

Running Specific Sports Blade

Below knee or above knee amputees

Sprinting

- 100m – 400m distances



Cheetah® Xtend

Running Specific Sports Blade

Below knee or above knee amputees

Longer sprints and shorter-distance running

- 400m – 5000m distances



Cheetah[®] Knee

- Fast responsive knee that shortens as you swing through reducing your chance of falls
- Knee Disarticulation or Transfemoral Running
- The perfect match for Flex-Run™
- Enhanced hydraulics for faster swing speed



Running: Transfemoral



Running: Hip Disarticulation



Paediatric Sports Prosthetics

For very active children

Our children's range also have carbon blade options with Nike Soles that can be easily replaced.

Flex-Run Junior



Cheetah Junior



WATERPROOF



Transfemoral Running

- Some amputees prefer to use sports blades with no knee joint. This running style can be helpful for beginners learning to run.
- The straight pylon system can be used to run or play multi-directional sports
- This requires each leg to be swung out wide to avoid tripping
- Lightweight
- Energy conserving



Getting Active

Staying active isn't all about running

There are many ways to stay active

- Taking a walk
- Gentle stretching
- Bowls
- Yoga

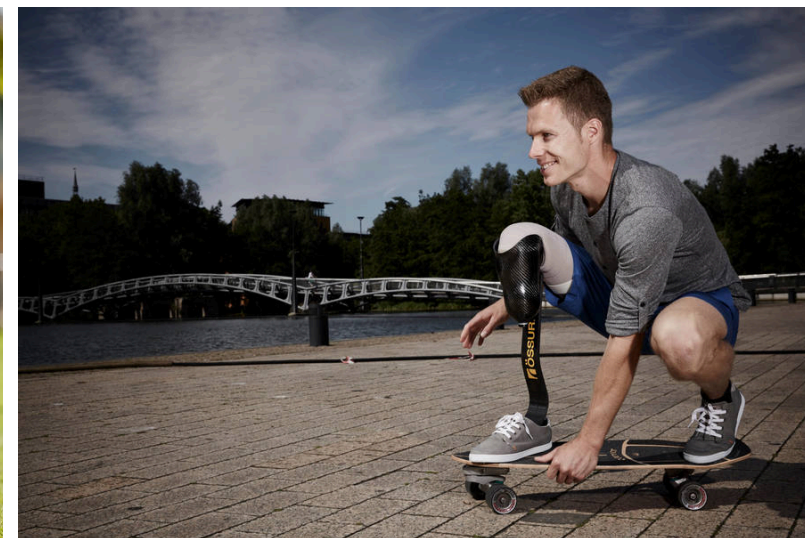
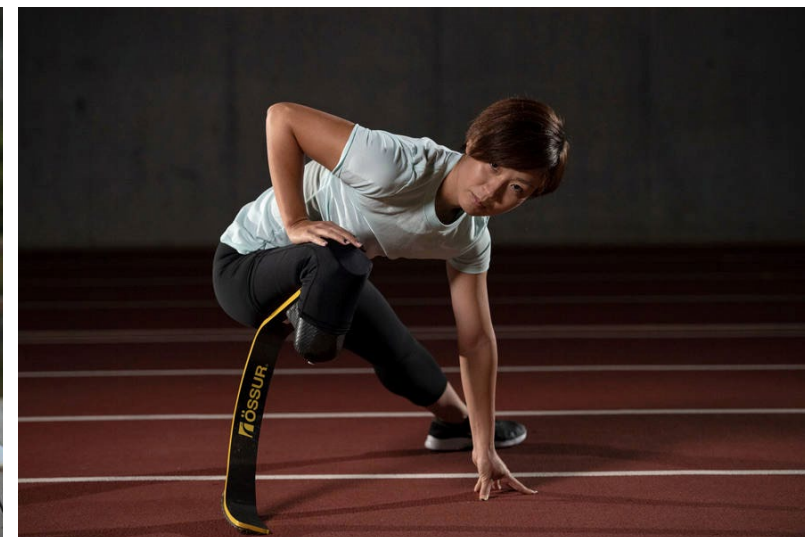
Activities not requiring a prosthesis:

- Swimming
- Amputee football
- Seated volleyball



We hope you all take care and stay safe

We'll see you at our next Mobility Clinic!



WE IMPROVE PEOPLE'S MOBILITY

