

Össur Mobility Clinics Australia



Hello Adelaide!!

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Aims for Athletes:

- Maximise the use of your prosthesis.
- Learn to run (or move quickly).
- Improve your balance.
- Learn to move confidently in all directions.
- Learn exercises to carry over into your daily lives as prosthetic users.
- Connect with other amputees.
- All in a fun and empowering environment.

Aims for Buddies (Health Professionals).



- Learn techniques to assist clients achieve a higher level of functioning.
- Gain a greater appreciation of amputees needs for “higher” functioning, no matter the starting point.
- Gain experience with Running Prostheses.

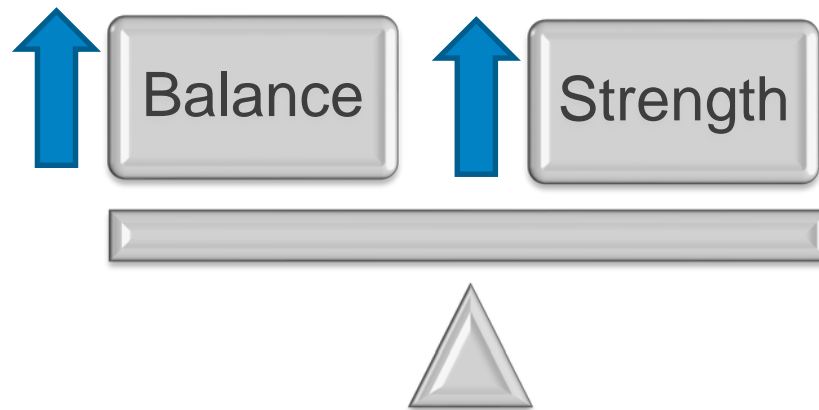
We learned from the expert:

Professor Robert Gailey PHD, PT.

- Physiotherapist and researcher – amputee rehabilitation, biomechanics and metabolic cost of prosthetic gait, functional assessment and athletic pursuits of the amputee.
- AMP and CHAMP
- Ossur Mobility/Running Clinics in the US.



Clinic Goals for Training/Exercises/Activities:



Improved Prosthetic Control
Improved Function
Improved Confidence
FUN!

The keys to moving forward...

- Efficiently
- Confidently
- Strongly
- Quickly



Exercise Essentials for Amputees. **Creating a New POWERHOUSE.**

Below Knee: **The Gluteal/Quad Complex (Butts and Thighs)**



Exercise Essentials for Amputees: **Creating a New POWERHOUSE.**

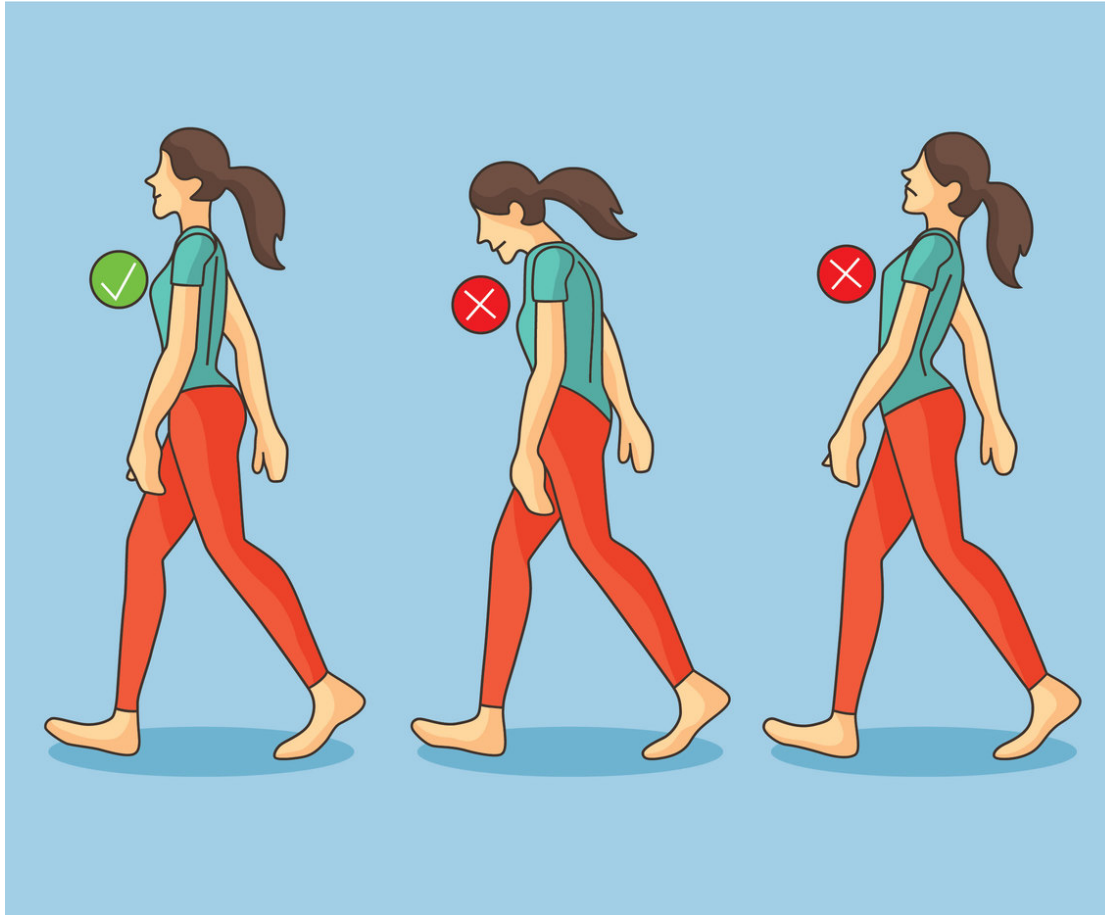
Strengthening your glutes and core together.



Better push off from your prosthetic side. Incorporating upper body rotation.



Moving from a more efficient Posture.



Finding your Core

The muscular corset pushes out against your hands...



When your core activates you will stand taller...



The Most Important Elements of Optimal Amputee Gait:

Getting onto the Prosthetic Toe



Loading the Prosthesis



For Amputees full range of hip extension is key:

1. The full length toe lever results in a longer stance phase which initiates an extension moment in the knee, resulting in a smooth **transition from stance to swing**.
2. Combined with a Flex-Foot there is a smoother transition onto the intact leg, **decreasing the stresses on the remaining limb**.
3. Resulting in a **more symmetrical gait**.



Using the entire prosthetic foot has many advantages:

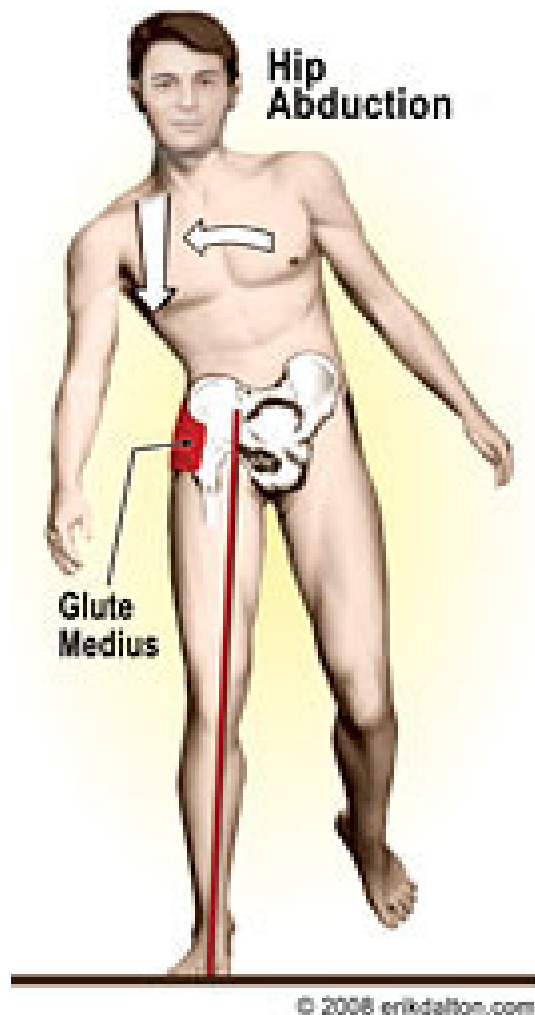
Achieving Toe-off:

Functional Outcome: Avoiding Drop Off.



- Equal Step Length
- More Natural Gait
- Reduced walking effort on level ground, ramp ascent, and ramp descent
- Gaining energy return.
- Smoother progression onto the sound limb.

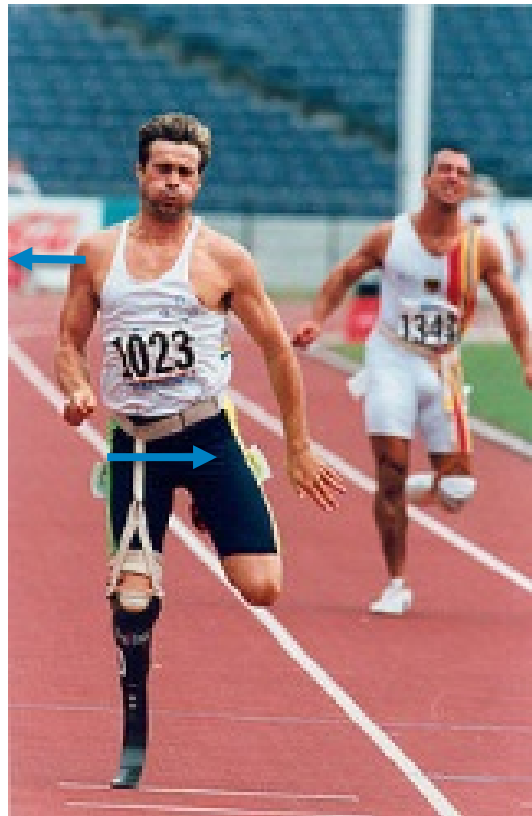
Efficiently moving your weight to the side to optimally load the prosthesis:



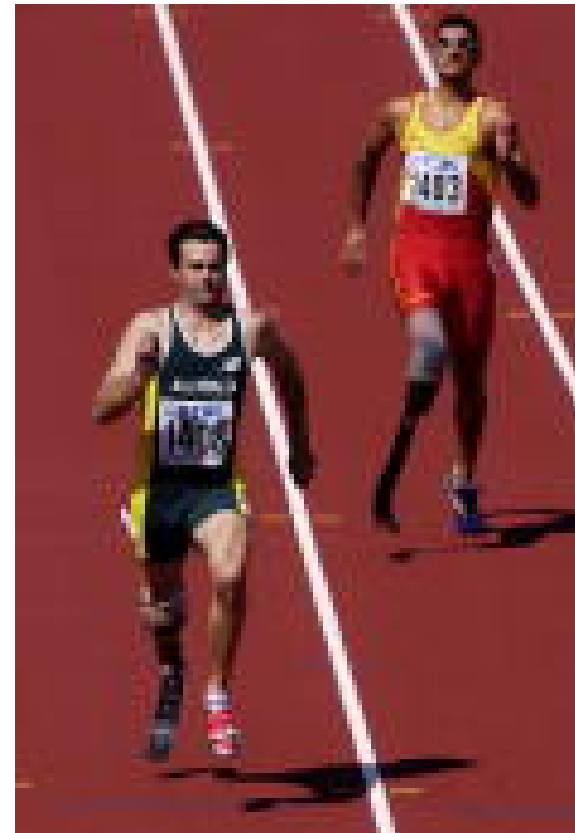
- The pelvis must move OUT over the prosthesis.
- The trunk is held upright.
- The arms rotate in opposition to the legs to keep the body balanced on one foot.
- This avoids gait deviations that will cause you to lose power and predispose to injury.

Importance of the Core and Lateral Pelvic Shift:

Excessive movement of the pelvis or upper body= loss of power and speed.



Good Core Stability enables effective transfer of power through the body to the ground= more speed/efficiency.



Lateral Trunk Bending: A Common Gait Pattern



The Importance of Lateral Pelvic Shift and Rotation



Resisted Lateral Pelvic Shift Exercises



Adding Resistance to the Activity



Yitiger, K. 2002. **Resistive Gait Training** leads to:

- Increased weight bearing
- Increased stride length
- Decreased step length on the amputated side
- Increased step length on the sound side
- Increased self selected speed

Arm Swing - the icing on the cake!

Balances your body over your prosthesis.



Increases your power and speed.



Learning to Coordinate Arm Swing.

Facilitated Walking



The differences and similarities between running and walking....



- Flight phase.
- Force production and absorption.
- Strong Core, powerhouse muscles.
- Arms and legs working in opposition.

What we will do at this Clinic: Resistance training...



Strengthening around the Core and Hips:



Powerhouse and Hard Core Session....TABATA :



- High Intensity Interval Training.
- Essential Exercises for Amputees.
- Something to take home.

Finding your Core

The muscular corset pushes out against your hands...



When your core activates you will stand taller...



Pre - Running...Drilling...

Better balance enables more time on your prosthesis to apply force more effectively back through the ground.



Focussing on using your entire prosthetic foot...



Amputee Running Technique (or Moving Quickly)

Prof Robert Gailey PT, Dept Physical Therapy, University of Miami



- 1: Prosthetic Trust
 - Repeated single hops onto the prosthetic side



- 2: Backward Thrust
 - Push down and pull back with limb at the same time inside the socket
 - Propel over the prosthetic foot
 - Use Gluteus and Hamstring muscle groups

Amputee Running Technique



- 3: Sound Limb Stride
 - Novice athlete has short sound stride
 - Reaching further out with sound side
 - Increase time to load prosthetic foot
 - **Squeeze the glutes and pull down and back with your stump**



- 4: Stride Symmetry
 - Strive for equal stride length and stride frequency between each limb
 - Relaxed strides
 - **Don't over stride with your prosthesis**

Amputee Running Technique



- 5: Arm Swing
 - Relax the upper body while running
 - Novice runners often keep arms close to their bodies
 - Arm swing encourages stride length and timing
 - With forward movement, hand should reach shoulder level
 - With reversing backward movement, hand should point just behind hip

- **NOTE-** If you have undergone *osseointegration* it is recommended that you **DO NOT RUN OR BOUND** at this Clinic.

Moving Quickly...Running Alternatives

- Squeezing your Glutes.
- The Hisssss on Heel Strike.
- HOP/SKIP RUNNING.
- Often used by T/F Amputees
- Double Support Phase on the unaffected side allows extra time for prosthetic swing phase.

Better Balance/Agility Drills... Multi-directional Agility for Sport.

Balance and Strengthening of the Ab/Adductors.



Give Sport a Go... Soccer, Basketball, Golf, Cricket.



General Stretching



- Gastroc / Calf
 - Lean forward into a lunge
 - Foot flat
 - Stretch Achilles and calf
 - Hold 30s



- Hip
 - Lunging position
 - Lean forward
 - Stretch left hip flexor, right upper hamstring
 - Hold 30s and switch legs

Caution: Protect the sleeve

The Warm Up.... Finding your Rhythm!

- Working with music.
- Encourages your body to become balanced – spending **equal time** on both feet to try to keep with the beat.
- Emphasising arm swing in **opposition** to the footwork.
- Exercises the muscles and joints through functional range and gently elevates the heart rate.
- Walking prostheses.



Guidelines for a great time...

Participate...It doesn't matter where you start



You will surprise yourself...



Guidelines for a great time...

Ask Questions...



Talk to people...



Guidelines for a great time....

Take the opportunity to push yourself...



Have a great time...

Rehydrate, Refuel, Be SunSmart!



Have FUN and SMILE!



Housekeeping for the Clinic:

- Wear both Therabands knotted as a belt- we will need them intermittently for exercise and drills.
- All activities at the clinic can be modified to your specifications ie your ability, amputation level/s or type of prosthesis. Feel free to check on the option applicable for you.
- For AKAs: “MPK” stands for microprocessor knee joint. Often the activity option for these is different to non-MPKs. Listen for the appropriate option for you. If you are unsure of your type of prosthetic knee joint, ask one of our Black T prosthetists for clarification. If you are not able to use your MPK in the way specified, do it the non-MPK way and you may like to join Cathy later, to learn how to do it.
- Join in have fun etc etc.
- If you have any questions – just ask! 😊