

AMPUTATION GLOSSARY

A

- AAF** - American Amputee Foundation, Inc.:
National nonprofit information and referral source for amputees, their families, and care providers
- AAOP**:
American Academy of Orthotists and Prosthetists, A professional society of ABC board certified practitioners. Founded 1970
- ABC**:
American Board for Certification in Orthotics and Prosthetics, A certification board for individuals and facilities providing orthotic and prosthetic services. Established 1948
- ACA** - Amputee Coalition of America:
National organization primarily funded by the Center on Disease Control and advertising from the prosthetic industry to provide information and advocacy for amputees.
- Acquired amputation**:
Limbs surgically removed due to disease or trauma.
- Adherent scar tissue**:
Tissue stuck down, usually to bone
- ADL's**:
Aids to Daily Living or activities of daily living
- AE**:
Above elbow
- AFO**:
Ankle-Foot Orthosis; device that encompasses the lower leg and foot.
- AK**:
Above knee. Also referred to as transfemoral
- Alignment**:
Position of prosthetic socket in relation to foot and knee.
- Ambulation**:
Walking, human gait
- Amelia, Phocomelia**:
A medical term for congenital absence of a limb or partial absence of limbs.
- Amputation**:
The loss or absence of all or part of a limb.
- Amputation**:
The loss or absence of all or part of a limb
- Amputee**:
A person who has an amputation = the loss or absence of all or part of a limb
- AOPA**:
American Orthotic and Prosthetic Association. A trade association of facilities (no individuals) that provide orthotic and prosthetic services. Founded 1917.
- Assistive/adaptive equipment**:
Devices that assist in performance or mobility, including ramps and bars, changes in furniture heights, environmental control units and specially designed devices.
- Ataxia**:
A form of CP, inability to perform coordinated muscular movements
- Atrophy**:
Diminishing of size and strength of muscles that are no longer used, as a result of nonuse, amputation, or paralysis.
- Auxiliary crutch**:
Type of crutch that fits up under the armpit of the user. Sometimes called the "underarm" crutch.
- B**
- BE**:
Below elbow
- Bilateral**:
Both sides---legs or arms
- Biomechanics**:
The study of the body ambulating, without deformities
- BK**:
Below knee. Also referred to as transtibial.

Bumper:

A rubber like (polymer based) device inserted into a knee or ankle component as a resistance or extension aid. Bumpers come in different durometers (color coded), which allow the amputee to have different resistance levels.

C

Canadian crutch:

Type of crutch that has metal or plastic sleeves that wrap around the forearm of the user. Also called "forearm" crutch.

CAPP Cookie Cruncher:

Can be body-powered or a manual device named for the Child Amputee Prosthetics Project at UCLA, it's purpose was designed to promote gross motor functioning and early grasp.

CAPO:

Canadian Association of Prosthetists and Orthotists.

CAT/CAM, (Contoured Anterior Trochanteric/Controlled Alignment Method): The popular term coined by John Sabolich, CPO for his socket shape derived from the work of Ivan Long, CP. The term was replaced by the trademarked name "Sabolich Socket" do to internal conflicts within the prosthetic industry that prohibited trademarking CAT/CAM in the United States.

Cavus foot:

Foot with a very high arch

Certification:

A level of training that is verified by the appropriate professional organization. It is your proof that the practitioner has the required TECHNICAL training. It in no way certifies the personality or business practices of the practitioner or facility.

Check socket/test socket:

A trial socket, often transparent, made to evaluate comfort and fit prior to final prosthesis design.

C-Leg:

A prosthesis for AK amputees. Knee unit is electronic and can make up to 50 gait adjustments per second.

CMT - Hypertrophic:

Peripheral nerve fibers are thickened, myelin sheath breaks down.

CMT - Neuronal:

The axon or central part of the nerve cell deteriorates

Codes (L-Codes):

Procedure codes for orthotics and prosthetics developed through the efforts of HCFA (Health Care Financing Administration) and AOPA.

Componentry:

Parts used in a prosthesis

Congenital:

From birth

Congenital amputee:

Refers to a defect from birth, "the baby was born without a hand." Individual born missing a limb(s). Technically, these individuals are not amputees, but are considered to be "Limb Deficient."

Congenital anomaly:

A birth abnormality such as a missing limb (Amelia) or deformed limb (phocomelia).

Congenital deficiency:

A condition present at birth, when all or part of a limb fails to develop normally.

Contralateral:

Refers to the side opposite of the injured or missing hand or arm

Control cable:

Stainless Steel cable used to move and to operate a body-powered prostheses. Can also lock and unlock mechanical joints. A cable system taken from the aircraft industry to control the operation of a prosthetic arm. Can also be used for lower extremity prostheses and orthotic systems as well.

Control scheme:

A method to control a prosthesis such as myoelectric, push switch, pull switch, servo, etc.

Controller:

An electrical circuit that controls an electric hand, wrist or elbow movement and function found in electrically-powered prostheses

Cosmesis:

The outer, aesthetic covering of a prosthesis, usually made of foam or a rubber like material. A cosmetic stocking almost always covers a foam cosmesis.

Cosmetic cover:

A plastic foam or rubber material, laminate or stocking that gives a prosthetic device a more natural appearance.

CVA:

Cerebral Vascular Accident, Stroke

D**DAK:**

Double above knee (aka bilateral). Also referred to as bilateral transfemoral.

Definitive prosthesis:

The finished prosthesis that meets accepted clinical standards for comfort, fit, alignment, function, appearance and durability.

Disarticulation:

An amputation through a joint: commonly the hip, shoulder, knee, ankle, elbow, or wrist

DMEs - Durable medical equipment:

Medical equipment such as wheelchairs, bath benches/chairs, walkers, crutches, canes, etc.

Donning and doffing:

Putting on and taking off a prosthesis

Dorsal surface:

Surface of the back of the hand

Dorsiflexion:

Pointing the toe/foot upward, toward the body.

Durometer:

Means different 'density' or strength and in the context of prosthetics means it will allow the ankle or knee to move, bend, flex more or less.

E**Early prosthetic fitting:**

A procedure in which a preparatory prosthesis is provided for the amputee immediately after removal of the sutures. (See IPOP)

Edema:

Swelling of the tissues.

ED:

Elbow Disarticulation

EMG (Electromyography):

electrical signal generated during contraction of the muscles

Endoskeletal:

Prosthesis that consists of a lightweight plastic or metal tube encased in a foam cover.

Energy storing foot:

A prosthetic foot design that stores energy when weight is applied to it and releases energy when the amputee transfers weight to the other foot.

Eversion:

To turn outward.

Exoskeletal:

Prosthesis made of plastic over wood or rigid foam.

Extremity:

Limb - arm or leg

Extension assist:

A method of assisting the prosthetic to "kick forward" on the swing through phase to help speed up the walking cycle. Used primarily for seniors, high AK amputations and those with limited strength in the residual limb.

F**Femur:**

The bone in the thigh region

Fibula:

Small support bone next to the tibia in the lower leg

Forequarter amputation:

Interscapulthoracic amputation

Functional envelope:

The area in space where the patient can control their prosthesis

G**Gait training:**

The method of learning to walk properly using a lower limb prosthetic device.

Greifer:

An electric hook made by Otto Bock that provides increased grip force, durability, opening distance, and wrist flexion and extension

GRIP/ADEPT:

Body-powered, voluntary closing terminal devices that close with tension is applied to the cable.

Gross body movements:

Large non-precise movements of the body

H**Hand/mitt:**

Either passive or active (terminal) device used to replace the hand.

Hard socket:

a prosthetic socket made of rigid materials.

HD:

Hip disarticulation. Amputation that removes the leg at the hip joint, leaving the pelvis intact.

Heel strike:

the moment when the heel makes contact with the floor at the end of the swing through phase.

Hemi-corporectomy:

Amputation of both hips, and lower spine, usually the lumbar spine.

Hemi-pelvectomy:

One half of the pelvis including the extremity on that side (usually for cancer).

HKAFO:

Hip-Knee-Ankle-Foot Orthosis; device that encompasses the hip and leg.

HP Hemi-pelvectomy (HP):

An amputation where approximately half of the pelvis is removed.

Hypotonia:

Loss of muscle tone, and consequently muscles may be stretched beyond their normal limits.

Hybrid prosthesis:

A prosthesis that combines several prosthetic options in a single prosthesis. Most commonly, when we refer to a hybrid prosthesis, we are referring to a prosthesis for an individual who possesses a transhumeral (above the elbow) amputation or deficiency. The most common hybrid prosthesis utilizes a body-powered elbow and a myoelectrically controlled terminal device (hook or hand).

I**Idiopathic:**

Latin word for "I don't know," unknown cause

Immediate post-surgical fitting (IPSF):

Application of a cast/rigid dressing immediately after surgery and gradual weight bearing on a preparatory prosthesis 2 or 3 days after surgery.

Initial prosthetic assessment:

A physical evaluation session with the amputee discussing his/ her concerns, needs, goals, and the prosthetic options available for his/ her amputation level and physical condition

Inversion:

To turn inward.

IPOP or Immediate Post Operative Prosthesis:

A temporary prosthesis applied in the operating room immediately after the amputation.

Ischial containment socket:

(SEE ischial tuberosity): The Ischial Containment socket cups the Ischial bone on the inside and back as well as the bottom to accomplish two things: 1) By cupping, or containing this bone inside the socket, the socket tends not to shift laterally (outside) when weight is put on it, making walking more efficient. This style of socket can have a very intimate fit and may take some time to get used to in order for it to become comfortable.

Ischial tuberosity:

The bone that protrudes from the back of the pelvis (the "butt bone")

that may get sore when sitting on a hard surface for extended periods of time.

J

Justification:

Written documentation that supports use of a specific prosthetic option because of the medical condition of the amputee

K

KAFO:

Knee-Ankle-Foot Orthosis; device that encompasses the entire leg.

KD:

Knee disarticulation. Amputation through the knee joint.

Knee components:

devices designed to create a safe, smooth walking pattern.

Krukenburg Procedure:

Surgical splitting of the lower forearm longitudinally into two parts to improve function by providing a sensate wedge grip. They are more common in Europe, and used for long bilateral transtibial amputees that are blind.

L

Lateral:

To the side, away from the mid-line of the body.

Left foot gas pedal extender:

Device to offset gas pedal in an automobile for right leg amputees.

Ligaments:

Tissue that connects bone to bone

Liners:

Used for suspension, comfort and protection of the residual limb. Includes rigid, silicone and neoprene. Also can be classified as locking or non-locking liners, Alpha liners, or gel liners.

LSO - Lumbosacral Orthosis:

Device that encompasses the lower torso .

Lumbar spine:

Five vertebra in the lower back

M

Manual locking:

device that locks the knee in complete extension to prevent buckling and falls.

Medial:

Toward the mid-line of the body.

Modular prosthesis:

An artificial limb assembled from components, or modules usually of the endoskeletal type where the supporting member, or pylon, is covered with a cosmetic covering (See "Cosmesis") shaped and finished to resemble the natural limb.

Multiaxis foot:

Allows inversion and eversion and rotation of the foot and is effective for walking on uneven surfaces.

Muscular Dystrophy:

Wasting of the muscle due to a defect in the muscle itself

Myelin sheath:

Fatty outer covering the surrounds the nerve

Myoelectrics:

Literally muscle electronics. Myoelectric prosthesis were first developed in Russia. This is a technology used in upper-extremity prosthetics. The prosthesis contains electrodes that are used to control the prosthesis via muscle contractions that in turn control a motor in the terminal device, wrist rotator or elbow . An attached battery pack provides the power system that translates the muscle contractions into movements of the prosthesis. Electrodes mounted within the socket receive signals from muscle contraction to control a motor in the terminal device, wrist rotator or elbow

Myodesis:

Muscles anchored to end of bone.

Myodesis procedure:

Performed during an amputation, by sewing the opposing bundles of cut muscle tissue to small holes drilled into the end of the bone of the residual limb. Adds to performance of the muscles since it is a more secure attachment for the muscles to act on and also helps to prevent future atrophy.

Myoplasty:

Muscles anchored to opposing muscles.

Myoplasty procedure:

Performed during an amputation, by connecting the opposing bundles of cut muscle tissue together. It adds good protection to the end of the cut bone and to prevent future atrophy.

N

Neuroma:

The end of a nerve left after amputation, which continues to grow in a cauliflower shape. Neuromas can be troublesome, especially when they are in places where they are subject to pressure from the prosthesis socket.

Normal Shape/Normal Alignment (NSNA):

Also know as a narrow ML socket: First described by Ivan Long, this socket more closely approximates the shape of the musculature of a residual limb, when compared to a quad socket. The sides, or medial/lateral measurement is tightened down to squeeze the residual limb, with most of the squeezing taking place on the outside or lateral side. This helps control the rotation of the socket by putting pressure along the fleshy area of the leg that can handle some side-to-side pressure.

Nudge control:

A mechanical switch that operates one or more joints of the prosthesis.

O

Occupational therapy/O:

Evaluation and training to maximize independence and function in daily living.

One-handed aids:

Devices to aid upper extremity amputees to perform twohanded functions.

Orthosis/brace:

A device used to straighten and/or Support a body part, improve function, or aid recovery.

Orthotist:

A patient-care practitioner who evaluates, designs, fabricates and fits orthoses (braces) and other devices to straighten or support the body and/or the limbs.

P

Palmar surface:

Palm side surface

Palsy:

A condition marked by loss of power to feel or to control movement in the effected part of the body

Partial foot amputation:

An amputation on the front part of the foot; also called "Choppart Amputation".

Passive prosthesis:

Also called a cosmetic prosthesis because it rarely provides the ability to grasp items as the prosthetic hand is non-functional and its may purpose is cosmetic restoration of the injured limb

Pathomechanics:

Biomechanics gone bad, with deformity

Patient-to-patient mentoring:

Amputee to amputee discussion and sharing of concerns and questions

Peer counseling:

An amputee talking to another amputee before or after an amputation. (See patient-to-patient mentoring).

Peroneal muscle:

Located on the outside of the leg below the knee to the ankle. These muscles assist to raise the foot during walking.

Pes Planus:

Foot with little or no arch, collapse of arch

Phantom pain:

Pain the area of the limb that is no longer there. Has been reported as a burning, stabbing, and/or cramping type pain.

Phantom sensation:

The "feeling" that the amputated limb is still there. Has been described as a tingling sensation or the missing limb is itchy. Normal response after amputation. Usually decreases over time.

Physical therapy/PT:

The evaluation and treatment of disease, injury or disability through the use of therapeutic exercises and modalities to strengthen muscles, improve range of motion and decrease pain.

Pistoning (or milking):

The term used when your liner stretches resulting in your residual limb pulling in and out - like a piston.

Phocomelias:

refers to a missing segment or under developed, "the baby was born with out a femur." - usually presents itself as very small, deformed versions of normal limbs

Plantar flexion:

To extend or point the foot downward

Pneumatic/hydraulic:

Provides controlled changes in the speed of walking.

Polycentric:

Multiple-axis joint, particularly useful with a very long residual limb.

Posterior:

The backside of the body.

Prehension:

The ability to hold, grasp or pinch

Preparatory prosthesis:

A short-term prosthesis, generally without cosmetic finishing, which is provided in the early phase of fitting to expedite prosthetic wear and use; it also aids in the evaluation of amputee adjustment and component selection.

ProControl:

An electronic circuit made by Motion Control, Inc. that proportionally controls myoelectric hand and wrist movements

Pronate:

Rotation of the wrist in an inward direction

Proprioception:

The awareness of the position of one's body

Prosthesis:

An artificial replacement for a body part.

Prosthetist:

A patient-care practitioner who evaluates, designs, fabricates and fits artificial limbs.

Pylon:

A rigid member, usually tubular, between the socket or knee unit and the foot that provides weight bearing support shaft in an endoskeletal prosthesis.. This is referred to as a "pole" in a temporary prosthesis.

Q

Quad socket:

The Quad socket has a shelf about one inch wide on the posterior wall of the socket that the Ischial Tuberosity rests on . The Quad socket has four clearly defined sides.

Quadriplegia:

Partial or complete paralysis of all four extremities

R

Range Of Motion (ROM):

Range of movement of a limb or joint such as the ankle, knee, hip, wrist, or elbow.

Referral source:

An individual or entity that instructs the amputee where to receive prosthetic care, typically a physician, case manager for the insurance company, social worker, or rehab nurse

Rehabilitation plan:

A personalized action plan detailing the steps involved to fully maximize rehabilitation potential

Rehabilitation team:

A group of people (Physician/ surgeon, Therapist (Physical and/ or Occupational), Case Manager/ Rehab Coordinator, Prosthetist, Psychologist, and Amputee) working cooperatively to create and implement a rehabilitation plan

Residual limb:

Portion of limb post-amputation, sometimes referred to as a stump.

RGO:

Reciprocating Gait Orthosis; special HKAFO that allows paralyzed persons to walk step over step; generally used with crutches for balance

Rigid dressing:

A cast applied soon after amputation to control swelling and pain; used to promote shrinkage and shaping of the residual limb in preparation for a prosthetic fitting.

S

S.A.C.H.:

Solid Ankle Cushioned Heel foot component. A very basic, "passive" foot; very stable.

SD:

Shoulder Disarticulation-- Amputation through the shoulder joint.

Silesian belt or bondage:

Suspension belt used in lower extremity prosthetics

Single axis foot:

Used since the Civil War, this foot has an ankle hinge that provides dorsiflexion and planar flexion. i.e. , toe up & toe down. The disadvantages of a single axis foot include poor durability & cosmesis.

Single axis knee:

Free singing knee with small amount of friction.

Socket:

Portion of prosthesis that fits around residual limb/stump and to which prosthetic components are attached.

Soft Inner liner:

Can be made of closed cell foam, silicone, gel, leather, and other materials for cushioning the residual limb. They are used between the socket and the residual limb

Soft socket:

inner socket liner of foam, rubber, leather, other material for cushioning the residual limb.

Soft socket:

Inner socket liner of foam, rubber, leather, other material for cushioning the residual limb.

Solid color core:

Any material whose color is consistent throughout, not just on the first layer

Split hooks:

Terminal devices with two hook-shaped fingers operated through the action of harness and cable systems.

Stance control:

Friction device with an adjustable brake mechanism to add stability.

Stance flexion:

Mimics normal knee flexion at heel strike.

Steering ring or knob:

An assistive device for upper extremity amputees to help steer an automobile.

Stockinette:

Tubular open-ended cotton or nylon material.

Stump:

Portion of limb remaining after amputation.

Stump sock:

Wool or cotton sock worn over residual limb to provide a cushion between the skin and socket interface.

Stump shrinker:

An elastic wrap or compression sock worn on a residual limb to reduce swelling and shape the limb.

Suction:

Provides suspension by means of negative pressure vacuum in a socket; achieved by forcing air out of the socket through a one-way valve when donning and using the prosthesis.

Supercondular suspension:

A method of holding on a prosthesis by clamping on the bony prominence above a joint, called "Condyles"

Supinate:

Rotation of the wrist in an outward direction

Suspension:

Refers to how the orthosis/prosthesis is held on; may include suction, a strap or belt, a wedge, a neoprene sleeve or other method.

Swing phase:

Prosthesis moving from full flexion to full extension

Switch control:

Use of electric switches to control current from a battery to operate

an electric elbow, wrist rotator or terminal device.

Symes amputation:

A disarticulation amputation through the ankle joint that retains the fatty heel pad portion for cushioning.

T

Temporary prosthesis:

A prosthesis made soon after an amputation as an inexpensive way to help retrain a person to walk and balance while shrinking the residual limb.

Tendon:

Tissue that connects muscles to bones

Terminal devices:

Devices attached to the wrist unit of an upper extremity prosthesis that provide some aspect of the function (grasp, release, cosmesis, etc.)

TES belt:

A neoprene or Lycra suspension system for AK prostheses that has a ring that the prosthesis slides into. There is a neoprene belt that attaches around your waist by Velcro/hook and loop fastener.

TLSO:

Thoracolumbar-Sacral Orthosis; device that encompasses the entire torso.

Total contact:

An essential component of most prosthetic fittings, requiring contact between the limb and the prosthetic socket at all points, though not necessarily with uniform pressure.

Transtarsal amputation:

Through the tarsal (tarsus) or foot bones. Also known as partial foot amputation

Transhumeral amputation:

Amputation that occurs above elbow

Transradial amputee/amputation:

Person with an amputation below the elbow or an amputation that occurs through the radius and ulna (bones of the forearm)

TSB (Total surface bearing):

A total contact fitting approach which attempts to achieve a uniform distribution of weight-bearing forces, usually with tissue compression.

V

Voluntary-closing devices:

Terminal devices that are closed by forces on a control cable; grasp is proportional to the amount of pull on the cable.

Voluntary-opening device:

A terminal device that is opened by body motion and closed by elastic bands or springs

W

WD:

Wrist-Disarticulation

WHO:

Wrist-Hand Orthosis; device that encompasses the wrist and hand.

Wrist unit:

Component that allows interchanging or repositioning of terminal devices

AK - Above-Knee

BE - Below-Elbow

BK - Below-Knee

HC - Hemi-Corpectomy

HD - Hip-Disarticulation

HP - Hemi-Pelvectomy

KD - Knee-Disarticulation

SD - Shoulder-Disarticulation

TK - Through Knee

WD - Wrist-Disarticulation

This glossary was compiled by the American Amputee Foundation, Inc.
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Abbreviations for types of amputations:

AE - Above-Elbow