



Al-Mustaqbal University  
Collage of Engineering  
Prosthetics and Orthotics Engineering  
Second Stage

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## **ORTHOTICS I**

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# KAFO

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# INTRODUCTION

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- A brace may help by reducing pain, by supporting body weight and by aiding in ambulation. It may be supportive, preventive, corrective or protective device to improve the function.
- Supportive bracing is meant for stabilization of the part or a joint with paralyzed musculature.
- Preventive bracing for the deformity prevention is the most common application in childhood disabilities.
- Corrective bracing is used for congenital deformity of feet, tibial torsion, Congenital diaphragmatic hernia (CDH) and Scoliosis, etc.
- Protective bracing is needed for anesthetic foot. Patients without motivation, i.e. if he has no inner will to improve his functions, he will not use the Orthosis even though it may be prescribed and fabricated for him.
- Further patients with medical problems with no sufficient strength to utilize the orthosis properly or with severe degree of motor weakness may find the use of an orthosis too problematic for practical use.

# KAFO

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- A KAFO is a long-leg orthosis that spans the knee, the ankle, and the foot in an effort to stabilize the joints and assist the muscles of the leg.
- While there are several common indications for such an Orthosis, muscle weakness and paralysis of the leg are the ones most frequently identified.
- The most common causes of muscle weakness include:
  1. Poliomyelitis
  2. Muscular Dystrophy
  3. Multiple Sclerosis
  4. spinal cord injury

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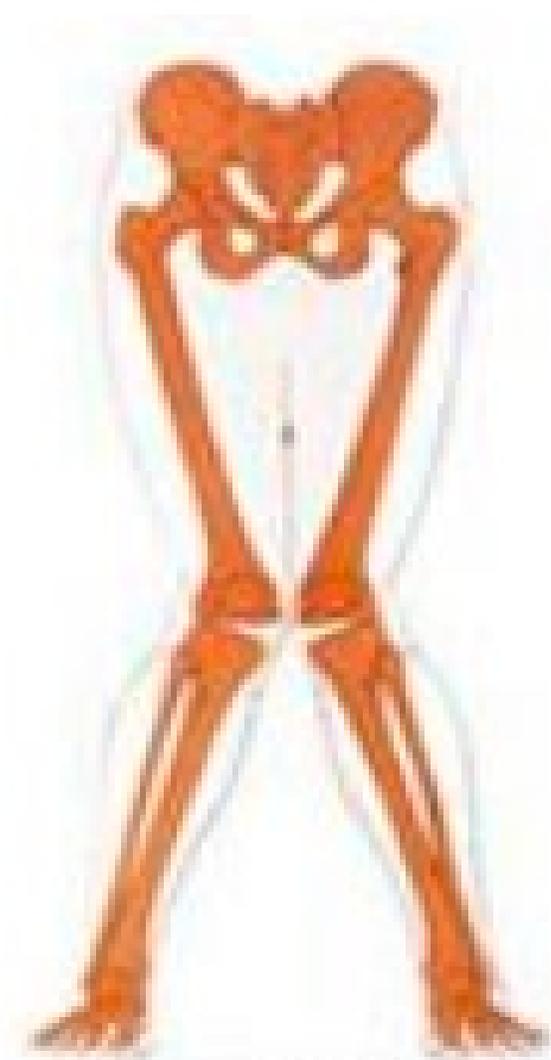
- The term KAFO is an acronym that stands for Knee-Ankle-Foot Orthosis and describes the part of the body that this device encompasses.
- This device extends from the thigh to the foot and is generally used to control instabilities in the lower limb by maintaining alignment and controlling motion.
- Instabilities can be either due to skeletal problems: such as, broken bones, arthritic joints, bowleg, knock-knee, knee hyperextension or muscular weakness and paralysis.
- With this in mind, the indications for the use of a KAFO are many and varied and any one particular design is specific to the needs of the person it is made for.



**Normal**



**Bowlegs**

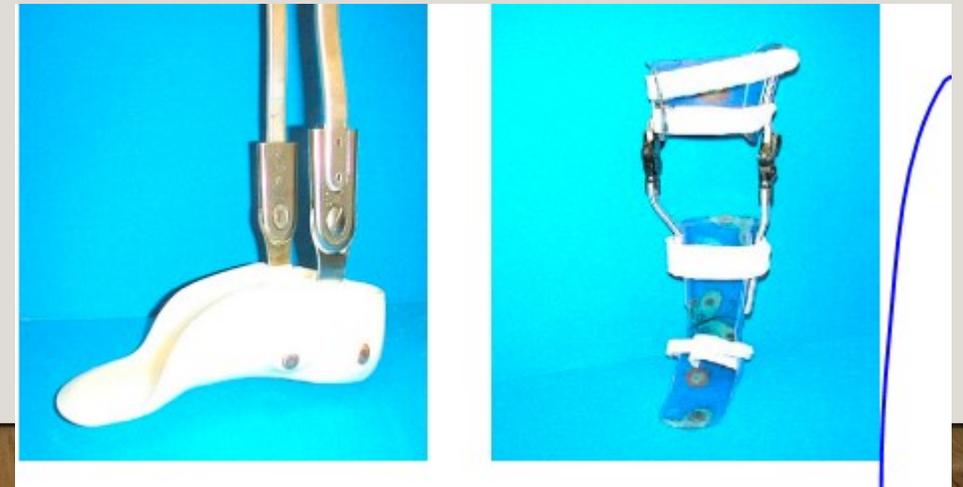


**Knock-Knee**

# KAFO TYPES

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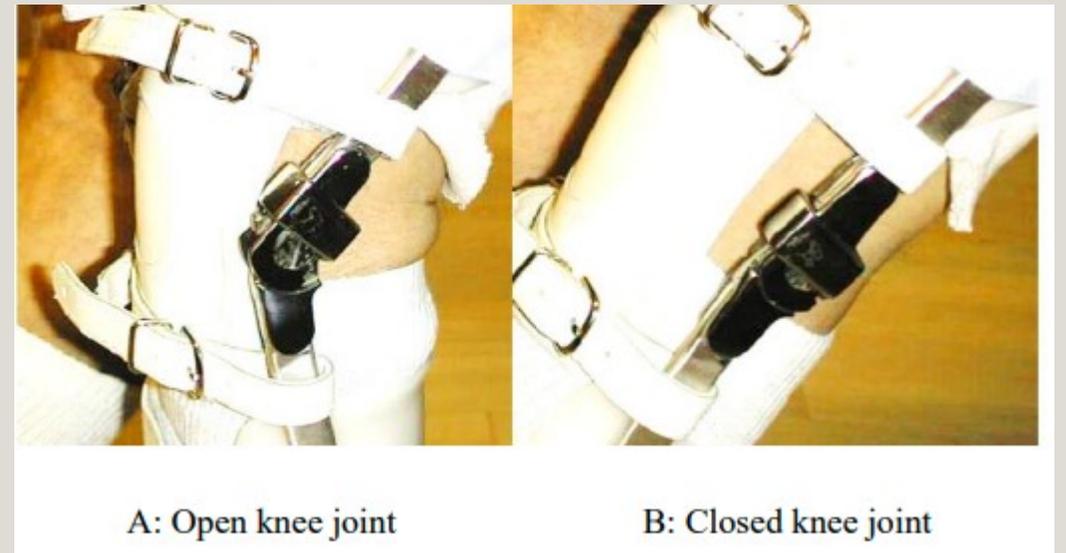
- There are two very general categories of KAFOs: Metal designs and plastic and metal designs.
- The metal design consists of a metal structure shaped to the limb and upholstered with leather at the points where the device makes contact with a person's body. This is the more traditional of the two designs.
- The plastic and metal design is the one most frequently encountered today and is usually a plastic device custom molded to the person's body with metal components in key structural areas only.
- The reason for the increased use of the plastic and metal design is that it is lighter in weight and is considered to be more cosmetic.



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- Some KAFOs may have drop locks at the knee joint.
- A drop lock allows the knee to be kept in extension or straight while walking and the joints can be unlocked for sitting.
- Drop locks would be used for someone with severe knee instability.



# APPLICATIONS OF KAFO

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- Since there are many different reasons to use a KAFO, there are many different designs.
- Each design has its own special features and its own specific way to be put on properly.
- The orthotist providing the device will instruct the patient on the proper way to put the KAFO on at the fitting to make best use of the design features of the device.
- The following instructions are for putting on a basic plastic KAFO with metal uprights:
  1. While sitting, position the thigh and the leg inside the KAFO.
  2. Position the heel completely back into the plastic of the KAFO.
  3. Secure the Velcro strap across the instep.
  4. Continue fastening the Velcro straps up the leg and the thigh.

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- The foot can then be inserted into the shoe. If necessary, the insole of the shoe can be removed to allow for more room for the foot portion of the KAFO.
- Before prescribing the brace, a detailed clinical evaluation is essential, especially the following points should be carefully noted.
  1. Proper clinical history of the case.
  2. Complete neurological assessment including motor and sensory examination of the extremity and spine.
  3. Assessment of deformity around hip, knee and ankle.
  4. Limb length discrepancy.