

Recommendations for prescription of orthoses



Biomechanical problems can have a significant impact on the legs, pelvis and lower back – and obviously the feet. If a patient complains of pain in these areas, customised biomedical orthotics can lead to relief and/or prevention of symptoms. Orthotics provide pain relief and ongoing support to allow for realignment of the knees, hips and spine, thereby providing relief for a range of musculoskeletal problems not limited to the feet. In most cases orthotics can prevent disability and further deformity of the foot caused by incorrect biomechanics.

PATIENT ASSESSMENT

1. Biomechanical assessment: patients should be fully assessed to record range of movement, gait and function.
2. Pathological assessment: underlying pathology causing foot abnormalities should be evaluated.
3. Footwear analysis: patient footwear should be evaluated and recommendations should be made for shoes that provide support and, when necessary to allow mobility for deformed feet, a wider toe box.

ORTHOTIC PRESCRIPTION

1. The orthotic prescription should take patient footwear and the patient's biomechanical needs into consideration along with underlying pathology to provide a fully supportive device that takes all of the patient's needs into account.
2. Orthotic materials: in Australia, most orthotics are made from plastic polymer, EVA or carbon fiber. The material selected for the orthotic should provide the level of flexibility required on the basis of foot type and patient pathology. Thinner polymer devices provide the most flexibility.
3. Orthotic production: milled vs vacuumed plastic polymer— vacuumed plastic polymer will be more flexible than milled due to heat molding. Carbon fiber is altered in production to provide adequate flexibility.

4. Positive cast modification

Cup depth: heel cup depth is available in a range of sizes to provide more (deep cup) or less (shallow cup) surface area. Cup depth should be selected based on the underlying patient pathology as inadequate surface area can reduce the efficacy of the orthotic.

Width: orthotic width is often selected on the basis of shoe type, however width should be selected according to the level of support required and the degree of pronation. Wider orthoses will provide more support to limit pronation, whereas narrower orthoses will allow for increased movement.

Fill: the depth of cast fill optimises the fit against the arch, thereby lowering or fully supporting the arch depending on the amount of support required. Fill should follow the arch of the foot and in patients with limited range of motion, fill should be shallower so as to not further reduce mobility.

5. Extensions and additions: there are a multitude of extensions and add-ons that can be used to further customise orthoses to fit a patient's foot type, deformity and underlying condition. Such extensions can significantly improve the effectiveness of an orthotic, leading to increased comfort, increased support and improved quality of life.



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