

# Biomechanics - adapting to the movement of the human body

## THE GAIT CYCLE

**Just as in jogging**, the gait cycle is a part of the leg and foot movement in indoor sports. The gait cycle begins when one foot contacts the ground and ends when that foot contacts the ground again. In addition to the gait cycle, indoor sports are characterized by fast, irregular lateral movements, which put tremendous stress on the ligaments, tendons and joints. The trick is to provide a shoe that addresses both, but let us start with the gait cycle.



**Cushioning phase**, making contact with the ground...

**Heel strike** the cushioning phase of the gait cycle lasts about 1/4 of the total time the foot is in contact with the ground. The foot pronates and rolls in. The cushioning phase ends when the forefoot makes contact.



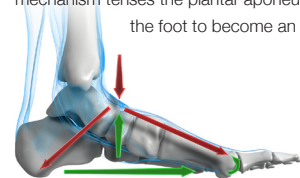
**Midstance**, stability is key

**Foot flat** the entire body weight is put on one foot. The body weight passes over the foot and leg that provide a stable platform while the other foot is swinging forward. This instable phase makes the majority of the cycle. Arch assist to support the body's own elements that resist excessive flattening, is vital.



**Propulsion**, taking off...

**Propulsion begins** when the heel lifts. The windlass mechanism tenses the plantar aponeurosis enabling the foot to become an efficient lever.



The windlass mechanism puts tension on the plantar fascia and raises the arch passively.

## LATERAL MOVEMENTS

**Fast and irregular** lateral movements are typical to indoor sports such as handball, floorball and squash. The knees and joints are subject to strong forces. Extreme pressure on the forefoot requires a shoe that distributes the weight as evenly as possible all over the foot.



## ORTHOPAEDICS

**TEAM ORTOPEDEKNIK - biomechanic and orthopaedic technology expertise**  
Orthopaedic technology combines technical and medical know-how, creating a unique expertise which, coupled with a holistic view, enables us to design specially adapted aids. Our goal is to satisfy all needs within our sector through high motivation and professionalism in orthopaedic technology. Our work is both preventive and rehabilitative. The results of our analysis and products shall work to support a functioning life and enable individuals to use their innate capacities as far as is possible. Our foremost goal is to contribute to the quality and security of life.

By using the latest technology we can monitor the different pressure points and the actual pressure while the athlete is exercising. Red colour marks heavy pressure.