DIGITSOLE® PRO

Case Study

Diagnosis and treatment of a patient with Achilles' tendonitis using Digitsole Pro

DigitsolePro.com

The practitioner

Fabrice Millet has been a sport podiatrist since 2003, specialising in running and cycling, and is an instructor in the Sport Podiatry D.U. in Lyon.

He has a highly varied patient clientele, including athletes and ranging from children to the elderly. In an ad hoc manner, he uses a pressure platform as well as a video device to analyse running for athletes.

Since November 2019, Fabrice Millet has used DigitsolePro for all of his podiatry consultations, which allows him to detect problems with mobility in both walking and running, and to obtain a better evaluation of his patients by measuring objective biomechanical data that cannot be observed with the naked eye.

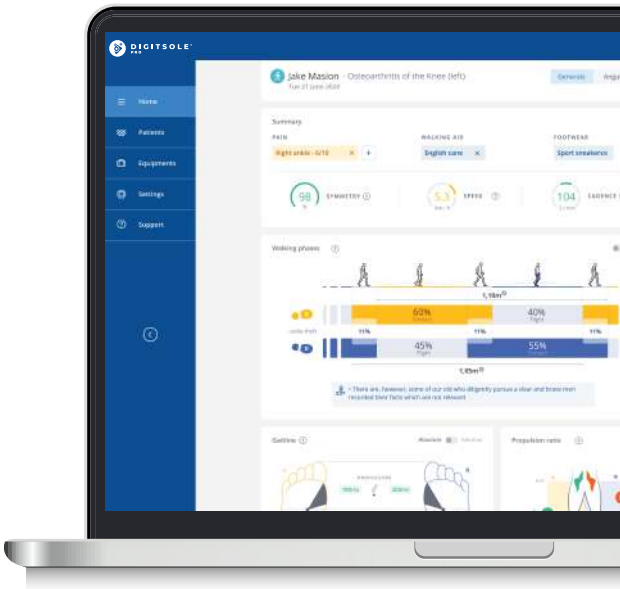
Patient information & reason for the consultation

The patient is a 29-year-old man who practices running 3 times a week with an average of 8000 steps per day.

He made an appointment with the podiatrist due to discomfort in the right foot in the Achilles tendon which starts increasing during running and causes him to stop his sporting activity.

How is DigitsolePro used in the practitioner's daily activity?

Fabrice Millet uses DigitsolePro® for the dynamic analysis (walking or running depending on the patient).
He collects data on the patient's walking or running activity using the web interface available online at https://app.DigitsolePro.com. The results are then presented to the patient, allowing the patient to integrate them into the treatment process and facilitating acceptance.



Does the practitioner use other movement analysis systems?

Fabrice Millet uses a camera to analyse the activity of athletes and movement analysis software in 2 dimensions of movement.

What are the most frequently used parameters and how are they used?

The sport podiatrist analyses the gait line, the swing phase, and the ankle roll (absolute)

The Gaitline

provides a **quick overall view of the walk** and shows what abnormalities may be detected. The contact times are indicated by step phase, allowing one to visualise a potential difference between the two sides and monitor the evolution.

The swing phase

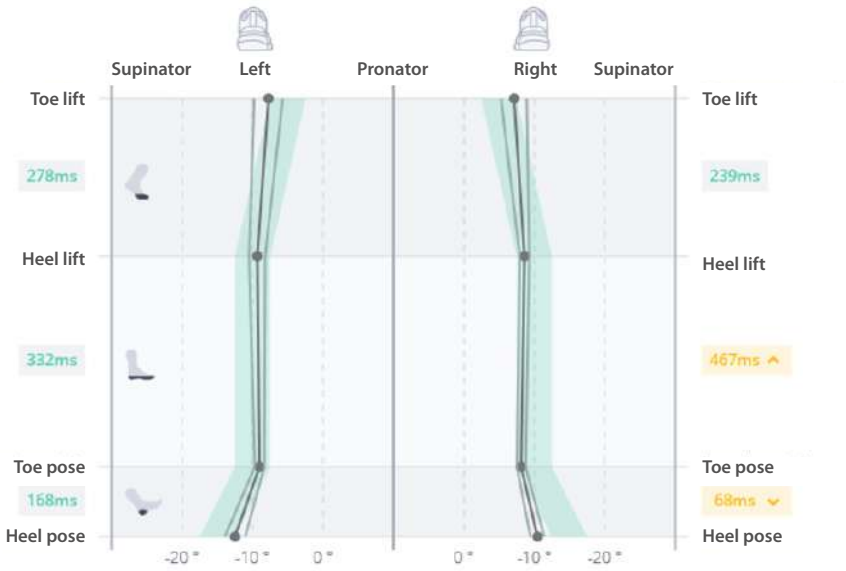
is used to determine **propulsion ratio** and the muscles that create the propulsion. In this way, the symmetry between the two legs can be verified.
The swing phase is also used to analyse the length of the stride and the similarity between the two sides. These data help in advising patients regarding daily exercises to avoid asymmetry (strength training, proprioceptivity, etc.).

The ankle roll

allows for the visualisation **angles when striking, flat footed, and during propulsion** in specify corrections.
The illustrative graphic is explained to patients, who can see their deformations and the differences between the two sides.

For this patient, what information was collected using DigitsolePro?

The gait line allows us to quickly see how the step rolls and the associated contact times.
The patient's foot strikes in pronation on the right side, then the step rolls without or with few abnormalities. On the other hand, the right heel contact time is far too short (compared to the right) due to inflammation.



The ankle roll is used to obtain the precise angles of deformation. Using these precise data, we add a correction under the right heel in order to prevent the pronation of the hindfoot, increasing tension on the Achilles tendon. We then observe that the patient has the tendency to control his step as his foot rolls by returning to the outside, finishing in supination during propulsion.

What examinations were carried out in order to complete the DigitsolePro® analysis? What information was obtained?

Fabrice Millet carried out his examinations in a conventional manner: questioning and examination while seated on a chair, examination standing and on one foot.

• During the questioning, we learn that the patient participates in triathlons. For several weeks he has been experiencing pain in the posterior side of the right leg, which has appeared progressively.

• The tendon palpation does not show nodules and forced flexing of the ankle causes pain.

• In a stationary exam, he has very few deformations.
The calcaneus is centred, and we note an increasing collapse of the midfoot on the right side.

• Standing on one foot while flexing the knee is difficult to do on the side experiencing pain.

• He also did a walking test. There was no running analysis due to the pain.

What diagnosis was given?

Achilles' tendinitis is often due to a number of factors. In this case, the pronation of the right foot increases the traction on the tendon and could be one of the causes.

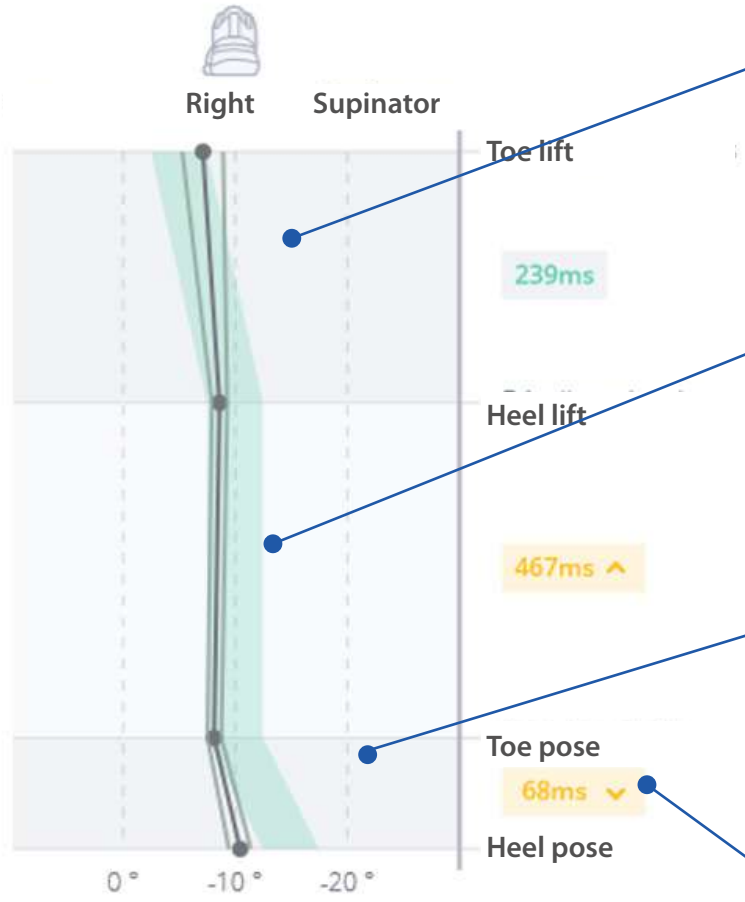
He should address the worn shoes (shoes with insufficient cushion increase the risk of inflammation), the type of strike (a forefoot strike increases the tension on the tendon).

He should verify if other exterior factors create or increase an inflammatory response (medication, poor hydration or food intolerance).

What treatment or solution was provided to the patient?

Thermoformed soles were made with compressible materials, but with a high density to be used for running.

The addition of removable bilateral heel pieces in order to relax the tendon and encourage healing. The pronation of the right foot was corrected to decrease traction on the tendon.



Under and over from 1 to give support to the first leg.

Half dome to control the pronation, and an external piece (sub-styloid) to prevent auto-correction will be added

Posterior supinator wedge to correct the valgus of the hind foot dynamically

Bilateral heel pieces to relax the Achilles tendon and bring the foot in equinus

Digitsole Pro, an international Establishment

ISO 27001 : 2017

International standard for information security. It's a requirement for establishing, implementing, maintaining and continually improving an information security management system (ISMS) –We make the information assets we hold more secure.

ISO 13485 : 2016

Regulatory requirements are increasingly stringent throughout every step of a product's life cycle, including service and delivery. Increasingly, organizations in the industry are expected to demonstrate their quality management processes and ensure best practice in everything they do. This internationally agreed standard sets out the requirements for a quality management system specific to the medical devices industry.

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