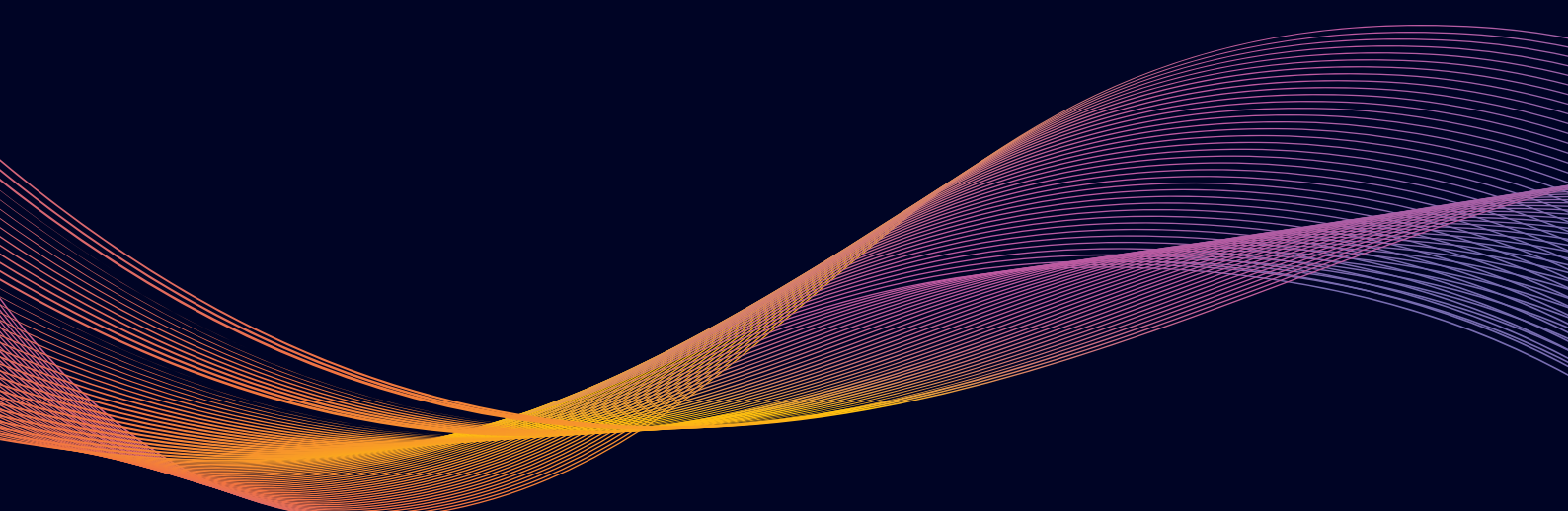




DIGITSOLE®
PRO

Case Study

Diagnosis and treatment of a patient with plantar myoaponeurosis using DigitsolePro



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 83-year-old women who walks regularly (5000 steps/day) and who has suffered for several months from pain under the plantar arch (anterior part of the heel) in the left foot.

This pain appears as soon as she wakes up, decreases during the day and reappears after each stationary phase.

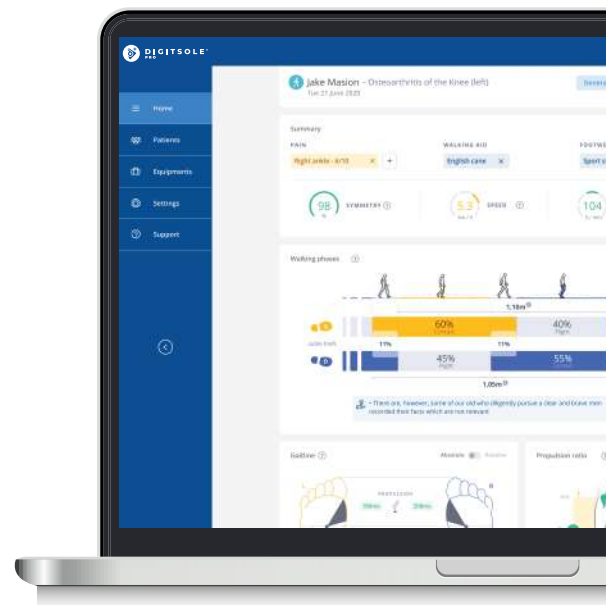
This pain prevents her from her daily walking

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

Fabrice Millet uses DigitsolePro.com® 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.).



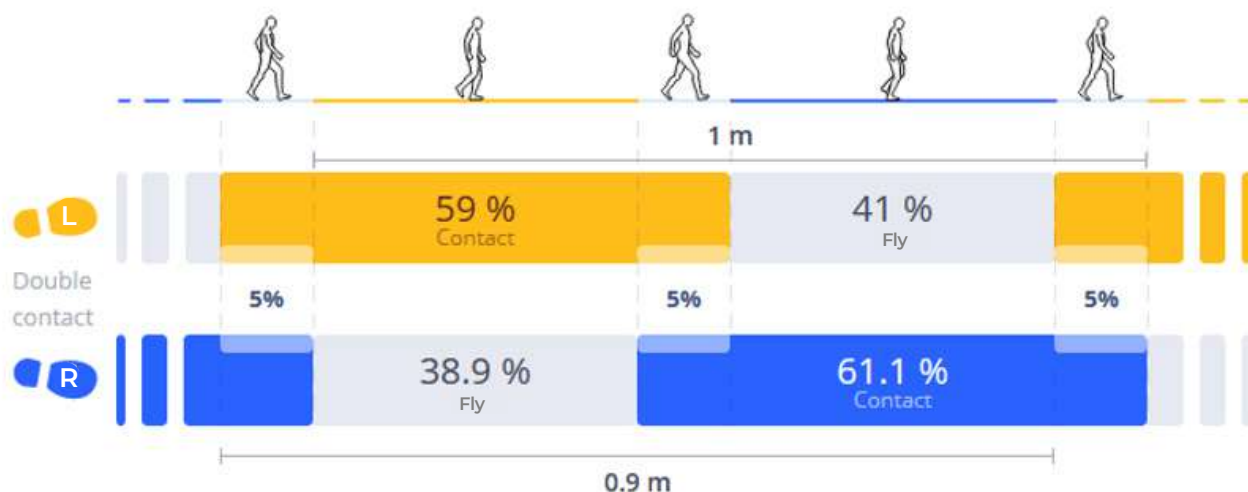
The ankle roll

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.

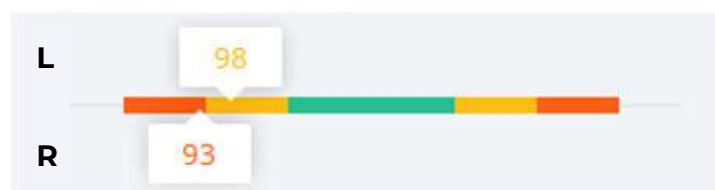
For this patient, what information was collected using DigitsolePro?

Walking profile ?

Advanced



Stride length (cm)



The walking profile allows us to see the contact times, airtime, and the length of the stride (distance between two heel contacts on the same side) for the right and left foot.

We observe a slight difference in the contact times as well as the length of the stride. The left foot touches for less time but travels a greater distance.

The explanation for these differences can be made by interpreting the propulsion ratio and the gait line.

Gait line ?

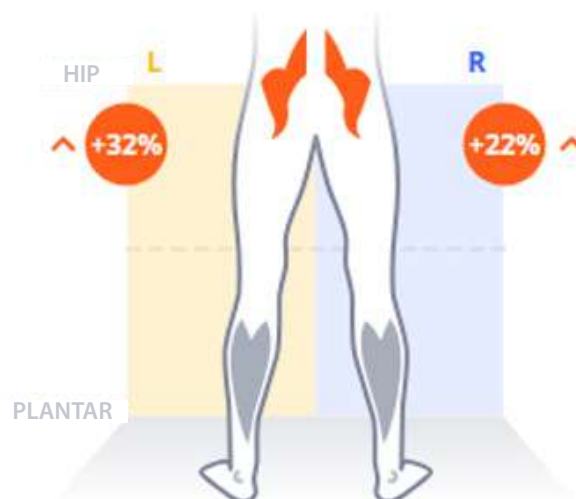
Absolute

Relative



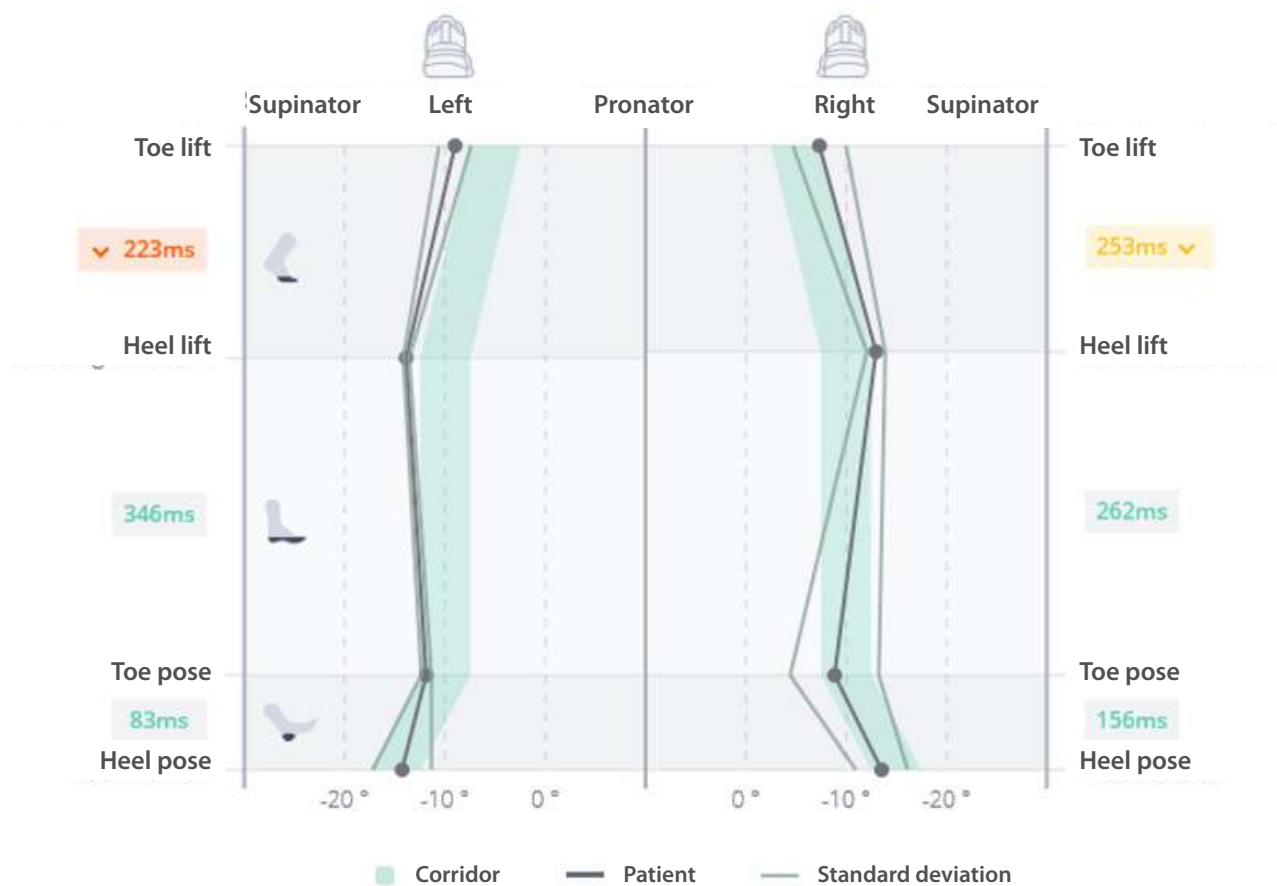
The gait line allows us to quickly see how the step rolls and the associated contact times. The left heel contact time is shorter due to the pain. The roll of the step shows few anomalies.

Propulsion ratio ?



The propulsion ratio allows us to see which muscles are the most utilised ones. We note a difference between the left and right sides.

Due to the pain, the patient uses the plantar flexors on the left side less, which decreases the contact time and slightly increases the stride length on the left side.



The ankle roll is used to obtain the precise angles of deformation.

The patient strikes normally in postero-external and then rolls in supination. A reinforcement on the external edge (sub-styloid) will be added to avoid this roll in supination.

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 learned that the patient walks regularly and starting to be handicapped by the pain, which prevents her from walking. She has been walking daily to the hospital for several months to visit her husband.
- The palpation of the painful area does not bring on pain, nor does the flexing with resistance of the 1st toe flexor. An x-ray was performed, and no anomaly (calcaneal spur) was observed. Tightness of the Achilles tendon was observed.
- In the stationary exam, there were very few deformations, the calcaneus is centred, support is very reduced, and we observe a hollow foot combined with hammer toes (factors promoting the occurrence of this pathology).
- The patient has a hard time standing on one foot with a bent knee, and she is very unstable.



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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