

# The contribution of foot reflexology in the management of Functional Intestinal Disorders (FID) and quality of life improvement: a Clinical Study.

## Clinical Review

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## Abstract

Functional Intestinal Disorders (FID) are common conditions affecting 10 to 15% of the global population. Reflexology is used to treat the associated symptoms, as it appears to relieve them and improve quality of life. This study, approved by the French Ministry of Health and the Committee for the Protection of Persons (CPP), therefore aims to evaluate and quantify the benefits of foot reflexology.

**Objective:** This study benefits assessment of foot reflexology: primary outcome measure = Francis score (with its four sub-scores); secondary outcome measure = quality of life; five associated symptoms not included in the Francis score.

**Materials and Methods:** Multi-center trial involving fifty-one participants over a 10-week period. A foot reflexology session administered every two weeks at each check-up visit on days 0, 14, 28, 42, and 56. No reflexology performed during the final session on day 70 (simple check-up). No control group.

**Results:** The Statistical analyses conducted by SOLADIS using SAS software seemed to show a significant improvement ( $p$ -value < 0.001) of more than 50% in the Francis score and its four sub-scores. For the five symptoms not included in the Francis score, a reduction in their frequency of more than 50% was observed.

**Discussion:** The data suggest that foot reflexology has an interesting effect, as they support the idea that it may reduce the symptoms of FID. However, these first results, without the support of a control group, need to be confirmed by complementary studies.

**Conclusion:** At the conclusion of the clinical trial, functional intestinal disorders seemed to show a significant improvement. It should be noted, however, that at this stage, in the absence of a control group, these results are merely indicative and should be confirmed by complementary studies.

## Keywords

Reflexology, Functional Intestinal Disorders, Francis scores, Prevention, Stress, Well-being.

## Abbreviations

FID: Functional Intestinal Disorders

CPP: Committee for the Protection of Persons

RNCP: National Directory of Professional Certifications,

D.H: Historical Record, WHO: World Health Organization

VAS: Visual Analog Scale, IIS: Irritable Intestinal Syndrome, NCM: Non Conventional Medicine.

## Preamble

This clinical trial, about the benefits assessment of foot reflexology in the management of Functional Intestinal Disorders (FID), has been filed with the French Ministry of Health under number ID RCB 2018-A01267-48 [1], as well as, at the Ministry's request, with a Committee for the Protection of Persons (CPP) (Mediterranean South 1, the 02/07/2018, reference 18 41.). The protocol and the reputation of the company charged with the statistical analysis (SOLADIS, the EFOR Group's CRO) [2] enabled these two bodies to issue a "favorable opinion".

This study's implementation and continuation were based on two conditions:

- the protocol (24 pages) was to be submitted to the Ministry of Health and to a CPP;
- practitioners were required to hold an RNCP (National Directory of Professional Certifications, published in the Official Journal of the French Republic) certification recognized by the state. At the start of the trial, only Elisabeth Breton's training center issued these certifications. The students trained there were therefore the only reflexologists eligible to participate in this project: about thirty across the territory [3]. Twenty of them received twenty hours of training on clinical trial procedures, provided by Dr. Alain Jacquet (Pharmacology - Bordeaux University Hospital), and only fifteen were able to participate in the trial, resulting in a small number of subjects included.

However, in the absence of a control group, the obtained results are only indicative and should be confirmed with complementary studies. Despite this, the Ministry of Health has validated this information and granted approval to proceed with the study.

The Historical Record (D.H), which includes the protocol, observation log, informed consent form, clinical report, and statistical report, has been uploaded to the SI RIPH 2G platform, managed by the Health General Directorate, under the number D.H 18.01865.001841 [4],

and to the CAIRN.INFO database, leading platform for French-language scientific publications [5].

## Introduction

Reflexology is classified as a complementary medicine by the World Health Organization (WHO) [6]. Edzard Ernst, a German-British physician, describes it as: "A therapeutic method involving the application of manual pressure to specific regions, or zones, of the feet (and sometimes the hands or ears), believed to correspond to regions of the body, in order to relieve stress and to prevent and treat physical ailments." [7]. Reflexology aims to contribute to a person's well-being, greater well-being, and the maintenance of their overall health reserves (Reflexologist Services, AFNOR/S99R Standard) [8]. Through its regulatory effect on the body and its impact on relaxation, it may help relieve FID [9-15]. However, the foot reflexology used in this study is not a substitute for medical treatment.

Functional Intestinal Disorders (FID) refer to a set of chronic digestive symptoms that occur in the absence of any organic abnormalities. The discomfort or pain they cause, which is generally not relieved by medication, has a major impact on "quality of life", which is often severely disrupted. It therefore seemed worthwhile to consider an approach based on "non-medicinal interventions", among which foot reflexology has its place.

The severity of FID is determined by the Francis Score (Table 1), a self-assessment scale completed by the volunteer, which offers the following advantages:

- easy to understand, thereby reducing the risk of errors when filling it out;
- very short: only four questions.

This score takes into account three symptoms commonly observed in patients with FID, as well as "quality of life" (4 items in total):

- Stomach pain
- Abdominal distension
- Stool frequency
- Disruption to "quality of life"

They are rated using a Visual Analog Scale (VAS), a 10-centimeter-long line, with the left end=0 and the right end=100, on which the volunteer places a cursor to indicate their assessment of the symptom being evaluated (e.g., 0 = no pain - 100 = very severe pain). The score is the distance in millimeters between the left end of the line and the cursor placed by the volunteer. Each of the four scores

**Table 1:** Example of Francis score, where C1 stands for “Consultation 1”.

Stomach pain	_____	C1 score	<input type="text"/>
	No pain	Very severe pain	
Abdominal distension (bloating, swollen stomach, unrelated to menstruation)	_____	C1 score	<input type="text"/>
	No distension	Important distension	
Stool frequency	_____	C1 score	<input type="text"/>
	Very satisfied	Not at all satisfied	
Disruption to “quality of life”	_____	C1 score	<input type="text"/>
	Not at all disrupted	Very disrupted	
Total score (sum of the 4 scores)		Total score for C1	<input type="text"/>

can therefore range from 0 to 100. They are then added together, resulting in a total score ranging from 0 to 400.

The Francis scale was completed at each visit.

## Materials and Methods

### General statistical methodology

The analyses were performed using SAS software (version 9.4, SAS Institute, Cary, NC, USA).

**Descriptive analysis:** All variables involved in the primary and secondary endpoints assessment were described in descriptive summary tables.

- Qualitative variables were described in terms of the counts and frequencies for each category and the number of missing values at each measurement time point. Missing values were not included in the percentages calculation.
- Quantitative variables were described using standard measures of central tendency (total number of data, number of missing data, mean, median, minimum, maximum) and standard measures of dispersion (standard deviation and interquartile range) for each measurement time point.

### Models and statistical tests

In this study, the statistical unit is the patient.

The relative change in the overall Francis score (primary endpoint) and the relative change in each subscore of the Francis score (secondary endpoint) were compared to the theoretical value of -30 (a 30% decrease in relative change) using a one-sided inferiority test.

Confidence intervals for the estimates were reported at the 95% level. The significance level for one-sided tests was set at 2.5%, in accordance with recommendations for clinical studies. For normality tests, a significance level of 1% was used.

One-sided comparison test of an observed mean against a theoretical mean (Student’s t-test) was performed if the data followed a normal distribution with a significance level of 2.5%. If the data did not follow a normal distribution, a nonparametric signed Wilcoxon test was performed.

The hypothesis guiding this trial is that the efficacy of foot reflexology can be confirmed if, at the end of the study, the reduction in the Francis Score (primary outcome measure) is statistically significant (p-value<0.001). The relative change in the Francis Score (Ev\_Francis) is assessed as follows:

$$Ev_{Francis} = ((S_{D70} - S_{D0}) / S_{D0}) * 100 \quad (1)$$

Where  $S_{D70}$ =Francis score at D70,  $S_{D0}$ =Francis score at D0

Since the relative change in Francis’s score between D0 and D70 was calculated as a decrease  $((D70-D0)/D0)$ , a one-sided lower-bound test was performed to detect a relative change in the score that was less than the theoretical value of -30%. The conclusions of this study were therefore based on the decrease in the Francis Score between the start and end of the trial (Table 2). Thus, the contribution of foot reflexology to the management of FID is considered “positive” only if the score decreases by at least 30%.

### Study Design

This study was conducted between September 2018

**Table 2:** Conclusions based on the decrease in the Francis score between the start and end of the trial.

Relative change in the Francis score $Ev_{Francis}$	The contribution of reflexology as “complementary therapy” for FID is considered:
Greater than or equal to 50 %	Very interesting
Between 30 and 50 %	Interesting
Less than 30 %	Not interesting

**Table 3:** Reflexology sessions schedule.

C1	Consent	C2		C3		C4		C5		C6	END OF TRIAL
D0		D14		D28		D42		D56		D70	
Inclusion and exclusion criteria		Trial exit criteria		Trial exit criteria		Trial exit criteria		Trial exit criteria			
Francis score + other items		Francis score + other items		Francis score + other items		Francis score + other items		Francis score + other items		Francis score + other items	
Reflexology		Reflexology		Reflexology		Reflexology		Reflexology		No reflexology	

and January 2025, with a hiatus during the COVID-19 pandemic (from March 25th to August 5th, 2020).

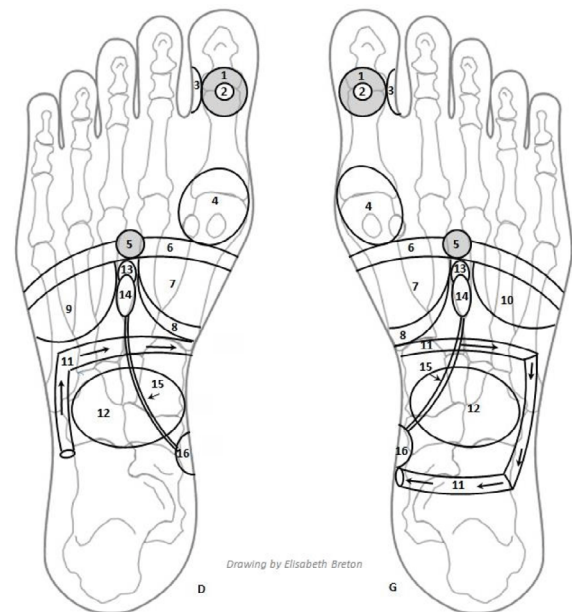
All reflexologists followed the same methodology, detailed during a preliminary meeting attended by all investigators. Each participant received the protocol and observation logs.

One foot reflexology session every two weeks at each check-up visit on D0, D14, D28, D42, and D56. No session during the final visit on D70 (simple check-up) (Table 3).

The foot reflexology used in the protocol is based on the foot reflexology massage technique. This protocol, used in the study, was developed in collaboration with experienced reflexologists and was identical for all participants and for each session.

The technique is performed entirely by hand, using the thumb and fingers. It involves precise, gentle, and targeted stimulation of the skin’s mechanoreceptors. It is based on anatomical landmarks, as well as on the stimulation of points across the entire foot arch’s front part through repetitive pressure, in accordance with the reflex zones map projected onto the foot arch (“standing body” projection) (Figure 1).

It should be noted, however, that to date, no reflex zones map has been validated by the scientific community.



**Figure 1:** Diagram of the stimulated plantar reflex zones projected onto the foot arch, according to Elisabeth Breton.

**The used method is based on:**

- empirical researches based on the work of Dr. William Fitzgerald on zone theory [16,17] and Eunice Ingham, a pioneer of modern reflexology and the creator of the first reflex zone map developed in 1938 [18,19]. Each reflex zone is believed to correspond to an organ or part of the human body, but this correspondence has not been sufficiently studied.

Advances in neuroimaging offer hope that we may one day be able to “measure” the reflex pathways on which reflexology is empirically and pragmatically based. Two Japanese studies have indeed demonstrated a relationship between the neural processing of somatosensory perceptions through reflexology stimulation and the tactile sensation in a specific reflex zone [20,21].

- anatomical and physiological knowledge of the nervous system, as well as on the involvement of reflex mechanisms and the effect on nerve centers [22,23,24].

The skin, particularly on the feet, contains nerve endings and touch-sensitive receptors. Reflexive touch generates stimuli that are transmitted to the brain via fibers specialized in pressure perception. There is therefore a close connection between the receptors in the skin and the sensory areas of the brain.

The nerve reflex is a specific type of response in which stimuli trigger reactions through a part of the nervous system (the central, peripheral, and autonomic nervous systems, which innervate the organs and glands).

**Two specific reflex techniques were used on the foot arch:** *the viscerocutaneous reflex technique* (a press-and-release technique using the thumb) and the connective tissue reflex technique (applying pressure to the plantar fascia with the thumbs while smoothing out the arch of the foot) [25].

The goal is to trigger a reflex stimulation in the periphery (somatic structures: skin, subcutaneous tissue, muscles, bones) in order to elicit a distant reflex response (somatic and/or visceral structures). Inducing this response involves stimulating specific neural circuits that follow a particular pattern of organization and function within the nervous system (central, peripheral somatic, and autonomic) [23,24].

**The reflex zones stimulated on the foot arch are as follows (Table 4):**

**Table 4:** Stimulated reflex zones, as shown in Figure 1.

1 – Head, Cranial plexus			
2 -	Pituitary gland, Hypothalamus	8 -	Pancreas
3 -	Brainstem	9 -	Liver and Gallbladder
4 -	Thyroid and Parathyroid glands	10 -	Spleen
5 -	Solar plexus	11 -	Colon, Large intestine
6 -	Diaphragm	12 -	Small intestine area
7 -	Stomach	13-16	Adrenal glands (13), Kidneys (14), Ureter (15) and Bladder (16)

- **anatomical area of the toes** corresponding to the reflex zones of the head, cranial plexus, pituitary gland, hypothalamus, and brainstem;
- **anatomical area of the foot arch upper part** associated with the reflex zones of the thyroid and parathyroid glands, solar plexus, and diaphragm;
- **anatomical area in the middle of the foot arch** corresponding to the reflex zones for the stomach, spleen, pancreas, liver, gallbladder, and renal plexus;
- **anatomical area at the base of the foot arch** corresponding to the reflex zones for the small intestine, colon, and bladder.

**Population**

A total of fifty-one people were included in the trial—forty-two women and nine men—ranging in age from 23 to 68. They were recruited gradually from the clientele of each reflexologist participating in the study, as well as through the doctors they consulted, on a voluntary basis.

Each participant signed the informed consent form and met the study’s inclusion criteria. However, seven of them were excluded before the study’s completion due to failure to attend check-up session (during the COVID-19 pandemic) and/or the initiation of a new treatment, resulting in a final total sample size of forty-four participants.

**Main inclusion criteria:**

- Men and women aged between 20 and 70.
- FID diagnosed by a doctor (general practitioner, gastroenterologist, geriatrician, etc.) for at least 6 months.
- Doctor seen in consultation within the past year to ensure that no hypothesis or diagnosis has been made regarding the possible presence of a somatic condition,

**Citation:** Jacquet A and Breton E. The contribution of foot reflexology in the management of Functional Intestinal Disorders (FID) and quality of life improvement: a clinical study. ES J Public Health. 2026; 6(1): 1022.

particularly cancer.

- Francis Score for C1  $\geq$  150.
- Acknowledgment of the documents provided at the beginning of the trial (information, consent).
- Signature of the informed consent form.
- Affiliation in a Social Security program.

**Main exclusion criteria:**

- Pregnancy and/or breastfeeding.
- FID treatment prescribed within the last three months.
- Intestinal tract cancer, even if it was diagnosed some time ago.
- Cancer that has not been in complete remission for at least five years.
- Subject psychologically unable to understand the study's requirements.
- Subject under conservatorship, guardianship, or deprived of legal capacity.

**Main exclusion criteria during the trial:**

- Volunteer's personal choice, without needed justification.
- Introduction of a new medical FID treatment.
- Cancer, regardless of its location.
- Taking a prebiotic or probiotic dietary supplement.
- Pregnancy.
- Failure to comply with check-up sessions.

**Session and Practice**

Before each session, the reflexologist conducts a reflexology assessment to ensure that the inclusion criteria are met, and fills out the observation log with the subject.

Each foot reflexology session lasts 45 minutes. The client lies comfortably on their back on a massage table, barefoot. The reflexologist disinfects the feet and then, using neutral massage oil, performs plantar reflex relaxation techniques to release muscle tension and prepare the feet for stimulation. The practitioner then applies manual pressure to stimulate each plantar reflex zone listed in (Table 4) for

2 minutes. The stimulation begins with the big toe, then gradually moves on to the upper part of the arch, followed by the middle, and finally ends at the heel.

Throughout the session, the reflexologist ensures the subject's comfort and adjusts the pressure as needed. At the end of the session, they discuss the volunteer's perceptions and sensations with them.

It should be noted that, although not all participants began their sessions on the same date (phased recruitment), the time periods between each session were identical and in accordance with the protocol.

**Evaluation Criteria**

- Francis overall score (Table 5) (stomach pain + abdominal distension + stool frequency + disruption to "quality of life"). Reflexology's contribution is considered to be:
  - very interesting if the score decreases by 50% or more.
  - interesting if the score decreases by between 30% and 50%.
  - not interesting if the score decreases by less than 30%.
- Francis score subscores (stomach pain (Table 6), abdominal distension (Table 7), stool frequency (Table 8), disruption to "quality of life" (Table 9)). Reflexology's contribution is considered to be:
  - very interesting if the score decreases by 50% or more.
  - interesting if the score decreases by between 30% and 50%.
  - not interesting if the score decreases by less than 30%.
- Secondary outcomes: these relate to symptoms commonly seen in functional intestinal disorders but not included in the Francis Score: gas, feeling of poor digestion, constipation, aerophagia, and diarrhea. For each of them, assessment of their frequency:

■ Never ■ Rarely ■ Often ■ Always

**Data Extraction and Synthesis**

The analyses were performed by SOLADIS using SAS software (version 9.4, SAS Institute, Cary, NC, USA).

The clinical report, written in French, includes the tables, lists, and figures provided in the Statistical Analysis Plan prepared on February 21st 2025, under reference

**Citation:** Jacquet A and Breton E. The contribution of foot reflexology in the management of Functional Intestinal Disorders (FID) and quality of life improvement: a clinical study. ES J Public Health. 2026; 6(1): 1022.

**Table 5:** Francis score analysis (primary outcome measure), where N is the number of subjects.

<i>ANALYSIS BY SOLADIS</i>		<b>C1 – D0 (N = 51)</b>	<b>C6 – D70 (N = 44)</b>
<b>Francis score</b>			
	Mean ± Standard deviation	258.39 ± 50.72	102.64 ± 88.65
	Median	256.0 (217.0 ; 288.0)	92.0 (20.0 ; 133.0)
	Minimum - Maximum	162.0 ; 378.0	0.0 ; 330.0
Relative change compared to D0			
	Mean ± Standard deviation		-60.73 ± 33.14
	Median		-62.6 (-92.0 ; -40.9)
	Minimum - Maximum	162.0 ; 378.0	-100.0 ; 35.2
Relative change between D0 and D70: decrease of more than 50%		95 % confidence interval	-70.81 ; -50.66
		Statistical test	Wilcoxon < <b>0.001</b> <b>Significant</b> <b>Very interesting</b>
		p-value (significance)	
		Subjects assessment at D70 regarding reflexology's benefits	

**Table 6:** “Stomach pain” subscore analysis.

<i>ANALYSIS BY SOLADIS</i>		<b>C1 – D0 (N = 51)</b>	<b>C6 – D70 (N = 44)</b>
<b>Stomach pain</b>			
	Mean ± Standard deviation	60.90 ± 17.69	24.36 ± 24.46
	Median	61.0 (48.0 ; 74.0)	20.0 (3.0 ; 41.5)
	Minimum - Maximum	17.0 ; 99.0	0.0 ; 96.0
Relative change compared to D0			
	Mean ± Standard deviation		-56.89 ± 44.39
	Median		-70.08 (-94.0 ; -27.5)
	Minimum - Maximum		-100.0 ; 81.1
Relative change between D0 and D70: decrease of more than 50%		95 % confidence interval	-70.38 ; -43.39
		Statistical test	Wilcoxon < <b>0.001</b> <b>Significant</b> <b>Very interesting</b>
		p-value (significance)	
		Subjects assessment at D70 regarding reflexology's benefits	

PAS/L/24/4066.

**Results**

To lighten the text, only the following are included:

- data from C1-D0
- data from C6-D70
- the statistical and the subjects conclusion.

**Table 7:** “Abdominal distension” subscore analysis.

ANALYSIS BY SOLADIS		C1 – D0 (N = 51)	C6 – D70 (N = 44)
<b>Abdominal distension</b>			
	Mean ± Standard deviation	73.78 ± 13.54	28.73 ± 24.03
	Median	74.0 (64.0 ; 83.0)	28.0 (3.0 ; 43.5)
	Minimum - Maximum	41.0 ; 100.0	0.0 ; 86.0
Relative change compared to D0			
	Mean ± Standard deviation		-61.11 ± 32.28
	Median		-58.9 (-95.9 ; -35.5)
	Minimum - Maximum		-100.0 ; 0.0
Relative change between D0 and D70: decrease of more than 50%		95 % confidence interval	-70.93 ; -51.30
		Statistical test	Wilcoxon < <b>0.001</b> <b>Significant</b> <b>Very interesting</b>
		p-value (significance)	
		Subjects assessment at D70 regarding reflexology's benefits	

**Table 8:** “Stool frequency” subscore analysis.

ANALYSIS BY SOLADIS		C1 – D0 (N = 51)	C6 – D70 (N = 44)
<b>Stool frequency</b>			
	Mean ± Standard deviation	57.84 ± 25.33	23.61 ± 25.10
	Median	62.0 (38.0 ; 80.0)	17.5 (2.5 ; 37.5)
	Minimum - Maximum	9.0 ; 100.0	0.0 ; 95.0
Relative change compared to D0			
	Mean ± Standard deviation		-56.61 ± 49.66
	Median		-63.7 (-93.5 ; -38.2)
	Minimum - Maximum		-100.0 ; 166.7
Relative change between D0 and D70: decrease of more than 50%		95 % confidence interval	-71.71 ; -41.51
		Statistical test	Wilcoxon < <b>0.001</b> <b>Significant</b> <b>Very interesting</b>
		p-value (significance)	
		Subjects assessment at D70 regarding reflexology's benefits	

Furthermore, five symptoms not included in the Francis score were assessed in this trial. Their frequency decreased over the course of the study, as summarized in the table below (Table 10).

## Discussion

Functional Intestinal Disorders (FID) refer to a group of digestive symptoms that affect 10 to 15% of the global population [26], and approximately 5 to 10% of the French population [27,28]. Although they are not serious, their chronic nature and recurring pain impair the quality of life of those who suffer from them. These disorders constitute a major challenge in general practice because treatment

**Table 9:** Disruption to “quality of life” subscore analysis.

ANALYSIS BY SOLADIS		C1 – D0 (N = 51)	C6 – D70 (N = 44)
<b>Disruption to “quality of life”</b>			
	Mean ± Standard deviation	65.86 ± 22.94	25.93 ± 25.48
	Median	70.0 (52.0 ; 82.0)	22.5 (4.0 ; 38.0)
	Minimum - Maximum	10.0 ; 100.0	0.0 ; 88.0
Relative change compared to D0			
	Mean ± Standard deviation		-61.84 ± 37.89
	Median		-70.5 (-95.3 ; -33.7)
	Minimum - Maximum		-100.0 ; 48.0
Relative change between D0 and D70: decrease of more than 50%		95 % confidence interval	-73.36 ; -50.31
		Statistical test	Wilcoxon < <b>0.001</b> <b>Significant</b> <b>Very interesting</b>
		p-value (significance)	
		Subjects assessment at D70 regarding reflexology's benefits	

options are limited, and they can often develop into chronic diseases.

More than 50% of patients with Irritable Intestine Syndrome (IIS) turn to Non-Conventional Medicine (NCM) on their own initiative because they are dissatisfied with common treatments. NCM's combine techniques that address both the body and the mind (relaxation, meditation, yoga), as well as mechanical interventions (physical activity, reflexology, osteopathy, acupuncture), psychological interventions (hypnosis, cognitive and behavioral therapies), and nutritional interventions. All of these approaches have been the subject of varying quality studies, some of which have documented interesting clinical outcomes-and in some cases their mechanisms of action-regarding the severity of IIS and patients' quality of life [29].

Complementary and alternative medicines, including reflexology, are thus increasingly used to manage symptoms associated with FID. In fact, it has been found that people with FID experience a real sense of well-being after a foot reflexology session.

Although several studies have been conducted on reflexology [30], few have focused on Functional Intestinal Disorders [31].

**The trial's main objective** was therefore to determine

whether regular foot reflexology sessions significantly reduced the symptoms associated with FID and improved the “quality of life” of those affected. Consequently, the study is limited to:

- an evaluation of foot reflexology benefits as a “complementary therapy” in the management of Functional Intestinal Disorders identified by the Francis score, as well as the disruptions to daily life they cause (also assessed by the Francis score).

**The secondary objective** was to evaluate the foot reflexology benefits on:

- Digestive symptoms commonly seen in FID but not accounted for by the Francis Score;
- Symptoms outside the digestive system that are commonly seen in FID.

This study's conclusions were based on the decrease in the Francis score between the start and end of the trial (Table 2).

**Study's key Strengths**

This study is a pioneering effort in the use of foot reflexology to improve FID. Furthermore, it is one of the few clinical studies on foot reflexology that have been validated and approved by French regulatory bodies (the

**Table 10:** Secondary outcomes analysis.

<i>ANALYSIS BY SOLADIS</i>	<b>C1 – D0</b>	<b>C6 – D70</b>
	<b>(N = 51)</b>	<b>(N = 44)</b>
<b>Symptoms not included in the Francis score</b>	<b>Very often</b>	<b>Very often</b>
Gas	41.20%	6.80%
Feeling of poor digestion	37.00%	2.30%
Constipation	21.60%	2.30%
Aerophagia	27.50%	0%
Diarrhea	7.80%	2.3 %

Health General Directorate and the Committee for the Protection of Persons) [32,33].

It demonstrated that five foot reflexology sessions (Table 3) can improve Francis scores in people with FID, as well as their “quality of life”. The initial estimate regarding the interpretation of the relative change in the Francis score was based on a decrease of at least 30% between the start and end of the trial. However, all of Francis scores-as well as those it did not include-far exceeded this estimate: the improvement seemed statistically significant for each of them (p-value<0.001) and, for all of them, greater than 50%.

In accordance with the protocol, the trial’s participants found reflexology to be very beneficial in the management of their FID (Table 5, Table 6, Table 7, Table 8, Table 9 and Table 10).

The data therefore suggest that foot reflexology has a very promising effect, as they support the idea that it can reduce these conditions’ symptoms. However, these initial findings need to be confirmed by other similar studies, and further research is needed to understand their duration.

**Biases**

Before the study began, each participating practitioner received the same protocol and the same instructions to follow throughout the trial. These reflexologists were also required to contact Dr. Alain Jacquet, the study’s scientific coordinator, in the event of a change in a subject’s condition (such as a new medical condition or new medication) or if they had any questions, in order to determine the appropriate course of action in accordance with the protocol. Nevertheless, due to the small number of participants in the study, each practitioner was independent and responsible for conducting the sessions in accordance with the established protocol.

Furthermore, due to the limited number of practitioners eligible to participate in the study (few reflexologists RNCP certified and recognized in France), the study

population had to be restricted. In addition, the COVID-19 pandemic and the lockdown implemented in France made it impossible to conduct the check-up sessions that had been initially scheduled. Indeed, participants who had started the study before these events but were unable to complete their check-ups, as well as those who contracted COVID-19, had to be excluded for “failure to meet check-up dates.” Participants whose reflexologist had fallen ill, as well as those who had started a new treatment, were also excluded. All of this further reduced the final study population.

It would therefore be interesting to compare the results obtained in this trial with those of an identical trial conducted with a much larger sample size.

Finally, to date, no reflex zones map has been validated by the scientific community, and the one used in this study is merely one interpretation among many. We therefore cannot guarantee that results, similar to those obtained in this trial, will be achieved with a different interpretation of the reflex zones.

**Study’s Limitations and Perspectives**

The absence of a control group is a limiting factor, as it precludes an objective and meaningful comparison of the results obtained with the experimental group. This shortcoming effectively prevents the full validation of foot reflexology as a practice able of alleviating FID and its associated symptoms: a control group could highlight the actual impact of the practice on these conditions.

The trial also lasted longer than originally planned due to the lockdown measures that were put in place, which led to a temporary suspension of the trial (from March 25th to August 5th, 2020).

It would be worthwhile to conduct a new study with a larger sample size, in collaboration with a professional organization-such as an association of practitioners who use the same technique, for example-which would allow for the potential inclusion of a greater number of participants.

**Citation:** Jacquet A and Breton E. The contribution of foot reflexology in the management of Functional Intestinal Disorders (FID) and quality of life improvement: a clinical study. ES J Public Health. 2026; 6(1): 1022.

Combined with this, a larger staff would make it possible to implement a sessions monitoring system to ensure they run smoothly and comply with protocol.

It might also be worthwhile to measure Francis scores during a follow-up visit, perhaps 6 months to 1 year after the study ends, to determine whether the obtained results remain significant.

Finally, another research avenue could involve comparing other reflexology methods or manual therapies (such as massage or shiatsu) benefits based on a similar concept.

## Conclusion

At the end of the clinical trial-which lasted ten weeks, during which a foot reflexology session was administered every two weeks (five sessions in total)-Functional Intestinal Disorders seemed to show a significant improvement. This is evidenced by:

- a statistically significant improvement in the Francis Score as a whole and its sub-scores, the main symptoms of FID being abdominal distension, stomach pain, stool frequency and disruption of “quality of life”;
- a clear decrease (> 50%) in the frequency of symptoms most often associated with FID: gas, feeling of poor digestion, constipation, aerophagia and diarrhea.

We think that this study can inspire other researchers as well as the community of reflexologists. Indeed, we have provided data that will facilitate the selection of specific reflex zones for FID, as well as their position on a plantar map. The areas selected and stimulated with this protocol can thus be reproduced by other reflexologists.

This clinical trial results may be applied to future research in reflexology for FID treatment but may also contribute to bridging the gap between empirical theory of reflexology, which assumes that a reflex zone corresponds to a locally defined projection of each body part or physiological function on the feet, hands, face, or ears, and actual clinical data [20, 21,22].

The research field is vast, but the subject is of prime importance because there are a significant number of people with FID seeking to relieve their symptoms by non-medicinal means, and complementary to medical treatments.

It is nevertheless necessary to emphasize that at this stage, without a control group, this clinical trials results are only indicative, and need to be confirmed by

complementary studies. If some studies show interesting results, there are currently not enough scientific arguments to recommend reflexology in the management of FID.

Finally, it is reminded that reflexology does not aim to “cure” patients, but to improve their well-being in addition to other treatments.

## Contributors List

Fifteen reflexologists volunteered to participate in this study. They were trained and guided by the authors.

Fifty-one volunteer subjects allowed this clinical trial conduction.

## Funding

A fundraising campaign was set up on the Leetchi platform to finance the statistical analyses carried out by SOLADIS, a company specialized in statistical analysis.

## Conflicts of Interest

The authors have no conflict of interest to declare.

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## Data Availability Statement

This clinical study’s related data are accessible via the following institutional platforms:

- Source data access -> SI-RIPH2G (controlled access, non public) [34]

The complete data of the study are archived in the Information System for Research Involving the Human Person of the Ministry of Health (<https://siriph.sante.gouv.fr/si-riph-2g/#/login>)

- Study reference number: N°18.01865.001841;
- Data type: regulatory file, administrative data filed by the promoter;
- Access terms and conditions:

- Secured and restraint access;
- Reserved for the entitled users (research depositor, competent authority, authorized organisms);
- Required authentication via the institutional portal.

This portal constitutes the official and regulatory source of the information dropped for the study.

- Access via open API -> API ECLAIRE (public access) [35]

Part of the study's descriptive data is accessible in open data via API ECLAIRE: <https://www.data.gouv.fr/dataservices/api-eclair>.

#### Description:

API ECLAIRE is a type REST public interface conform to the international standard HL7 FHIR, allowing the automatically extraction of structured data related to researches involving the human person registered in SI-RIPH2G.

#### Accessible content:

- Studies administrative metadata;
- Public information on protocols;
- Structured descriptive data (promoter, status, population, objectives, etc.).

#### Limitations:

- Partial access to data;
- Exclusion of confidential information and individual data of the participants;
- Exhaustive list of available field.

#### Access mode:

- API open and consultable publicly;
- Technical documentation and data diagram available online;
- Usable for interoperability, document retrieval and open data reuse.
- Mainstream portal – Santé.fr (public access) [33]

Public information from the ECLAIRE database can also be consulted via the national health information portal:

<https://www.sante.fr/essais-cliniques/2018-A01267-48/apport-de-la-reflexologie-massage-reflexe-plantaire-dans-la-prise-en-charge-des-troubles-fonctionnels-intestinaux>

#### Description

This public portal allows the simplified consultation of clinical trials authorized in France. The information displayed comes from the ECLAIRE database powered by SI-RIPH2G.

#### Accessible content:

- Summary sheet of the study;
- Objectives and abstract;
- Recruitment status;
- Main criteria and investigator sites;
- Information for patients and professionals.

#### Access mode:

- Free access without authentication;
- Web consultation only;
- Informational data (not mass downloadable).

Descriptive analyses were carried out and the results were presented in numerical form only.

#### References

1. National Agency for the Safety of Medicines and Health Products (ANSM). Available at: <https://ansm.sante.fr/page/essais-cliniques-obtenir-un-numero-denregistrement-idrcb-et-eudract>
2. SOLADIS group. Available at: <https://efor-group.com/en/soladis-joins-the-efor-group-bringing-0-years-of-expertise-in-statistics-and-data-management/>
3. Decree of July 7th 05 published in the Official Journal of July 5th 05 concerning registration in the National Directory of Professional Certifications (RNCP). Available at : <https://www.legifrance.gouv.fr/loda/id/JORFTEXT00003093008>
4. Information system SI RIPH G. Available at: <https://siriph.sante.gouv.fr/>
5. CAIRN.INFO platform. Available at: <https://stm.cairn.info/revue-hegel-08--page-90>

6. WHO Strategy for Traditional Medicine 04-03. Available at: <https://www.who.int/fr/publications/item/97894506096>
7. Ernst E. Complementary Therapies for Pain Management. An Evidence-Based Approach. Elsevier Science 007. ISBN 978-0-734-3400-9. 349 pages.
8. Standard AFNOR/S99R Services of the reflexologist. Available at: <https://norminfo.afnor.org/structure/afnors99r/prestations-de-service-du-reflexologue/7970#presentation>
9. Schultz W. Neuronal reward and decision signals: from theory to data. *Physiological Reviews*. 05. 95 (3): pp. 853–95. PMC449543. PMID 60934. doi: 0.5/physrev.0003.04.
10. Elbasan B. and Bezzin S., The effects of reflexology on constipation and motor functions in children with cerebral palsy. *Pediatrics and Neonatology*. 07. DOI: 0.06/j.pedneo.07.0.005.
11. Woodward S., Norton C., Barriball KL. A pilot study of the effectiveness of reflexology in treating idiopathic constipation in women. *Complement Ther Clin Pract*. 00 Feb. 6(): pp. 4-6. doi: 0.06/j.ctcp.009.06.00.
12. Bishop E., McKinnon E., Weir E., Brown DW. Reflexology in the management oencopresis and chronic constipation. *PaediatrNurs*. 003 Apr. 5(3): pp. 0-.
13. Hagège H. Alternative treatments in irritable bowel syndrome. *Clinical and Biological Gastroenterology*. 009; 33, Supplement : pp. S79-S83. ISSN 0399-830. [https://doi.org/0.06/S0399-830\(09\)758-3](https://doi.org/0.06/S0399-830(09)758-3).
14. Sajadi M., Davodabady F., Naseri-Salahshour V., Harorani M., Ebrahimi-monfared M. The effect of foot reflexology on constipation and quality of life in patients with multiple sclerosis. *Complementary Therapies in Medicine*. March 00; 49: pp. 0330. ISSN 0965-99. <https://doi.org/0.06/j.ctim.09.070>
15. Payrau B., Quere N., Breton E., Payrau C. Fasciatherapy and Reflexology compared to Hypnosis and Music Therapy in Daily Stress Management. *International Journal of Therapeutic Massage & Bodywork*. 07; 0(3): pp. 4–3. <https://doi.org/0.38/ijtmb.v0i3.368>
16. Fitzgerald W. and Bowers F. Zone therapy or relieving pain at home. 87.
17. Fitzgerald W. and Bowers F. Zone therapy or relieving pain at home. Columbus OHIO I. W. Long publisher 97.
18. Ingham E. *Stories the feet can tell*. Ingham publishing Inc. 938.
19. Ingham E. *Stories the feet can tell have told through reflexology*. Ingham Publishing Inc. 95.
20. Nakamaru T., Miura N., Fukushima A., Kawashima R. Somatotopical relationships between cortical activity and reflex areas in reflexology: a functional magnetic resonance imaging study. *Neurosci Lett*. 008 Dec 9; 448(): pp. 6-9.
21. Miura N., Akitsuki Y., Sekiguchi A., Kawashima R. Activity in the primary somatosensory cortex induced by reflexological stimulation is unaffected by pseudo-information: a functional magnetic resonance imaging study. *BMC Complement Altern Med*. 03 May 7; pp. 3:4. doi: 0.86/47-688-3-4.
22. Bossy, J. Neurobiological bases of reflexotherapies. Collection of reflex therapy monographs appl. In Masson eBooks. 978. 47 pages.
23. Pradal Prat D. Neurophysiological bases of reflexotherapies. Issue 9. July 009. Volume 57: pp.65. ISSN 779-03, <http://dx.doi.org/KINE-07-009-9-9-779-03-009-009054>
24. Wardavoire H. Reflex manual therapies. EMC - Physiotherapy - Physical Medicine - Rehabilitation. 0. 7. -3. 0.06/S83-0887()4394-4 [http://dx.doi.org/0.06/S83-0887\(8\)9-3](http://dx.doi.org/0.06/S83-0887(8)9-3)
25. Breton E. and Valéro J. Reflexology and functional disorders. DUNOD. November 0. 448 pages.
26. World gastroenterology organization. Available at: <https://www.worldgastroenterology.org/>
27. Health insurance – Ameli web site. Available at: <https://www.ameli.fr/assure/sante/themes/syndrome-intestin-irritable/reconnaitre-syndrome-intestin-irritable>
28. ASPII (Association of Patients Suffering from Irritable Intestine). Available at: <https://apssii.org/>
29. Gros M., Onana-Ndong P., Jemaï C., Toscano J-L., Florence B. M., Piche T. Place of non-conventional medicines in the course of irritable intestine syndrome. *Hepato-Gastro and Digestive Oncology*. 0. 9(3): pp. 368-378. doi:0.684/hpg.0.347

30. National Library of Medicine Pub Med website – reflexology. Available at: <https://pubmed.ncbi.nlm.nih.gov/?term=reflexology+foot&filter=pubt.clinicaltrial>
31. Tovey P. A single-blind trial of reflexology for irritable bowel syndrome. *Br J Gen Pract.* 00 Jan. 5(474): pp. 9-3. PMID: 798. PMCID: PMC3496.
32. Murat-Ringot A., Souquet P., Chauvenet M., Rentler C., Subtil F., Schott A., et al. The Effects of Foot Reflexology on Chemotherapy-Induced Nausea and Vomiting in Patients with Digestive System or Lung Cancer: Protocol for a Randomized Controlled Trial. *JMIR Res Protoc.* 00;9(7): e73.DOI:0.96/73 <https://pubmed.ncbi.nlm.nih.gov/34738909/>
33. French public health information service - Santé.fr. Available at: <https://www.sante.fr/essais-cliniques/08-A067-48/apport-de-la-reflexologie-massage-reflexe-plantaire-dans-la-prise-en-charge-des-troubles-fonctionnels-intestinaux>
34. Information system SI-RIPHG. Available at: <https://siriph.sante.gouv.fr/si-riph-g/#/login>
35. API ECLAIRE platform. Available at: <https://www.data.gouv.fr/dataservices/api-eclair>.