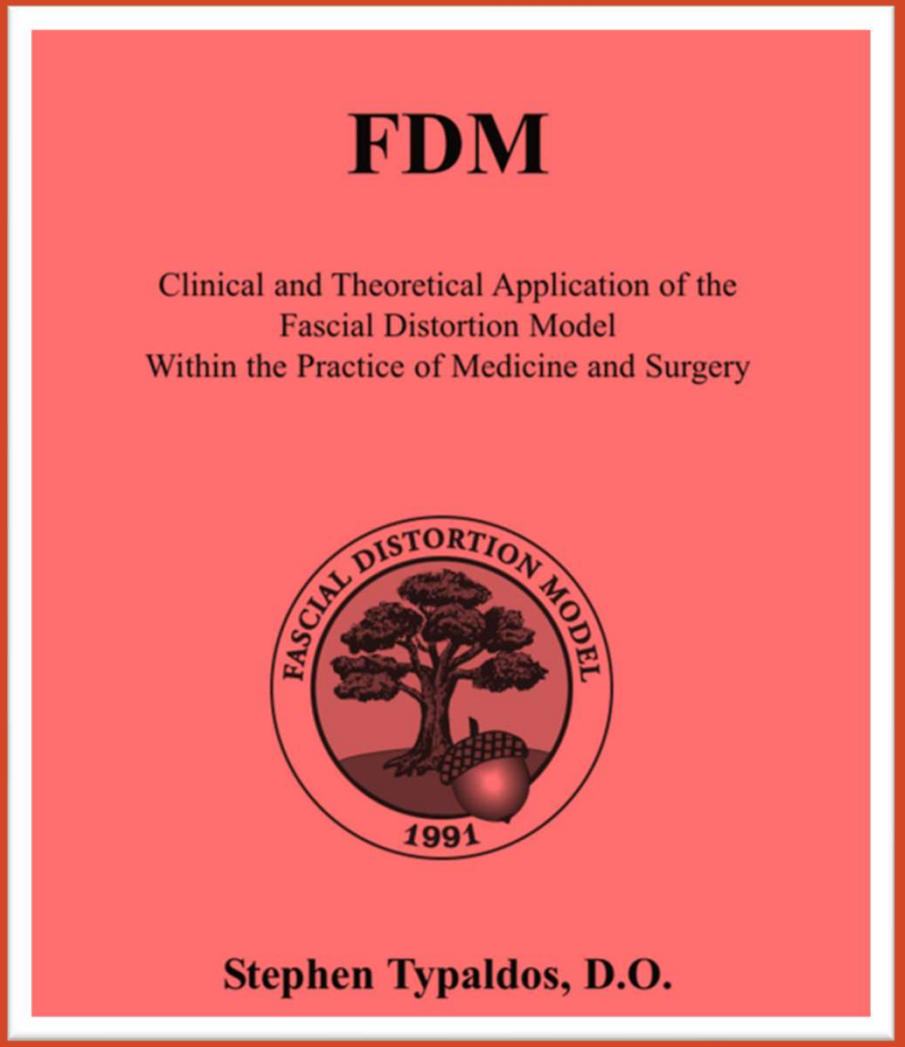
Effects of AACD

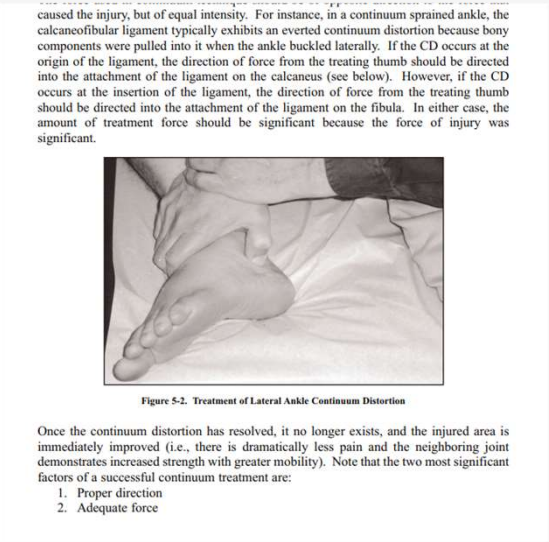
Insights from Data

Ryohei Miura
FDM Asian Association



Research Background

- There is little evidence for manual therapy.
- Investigated objective treatment effects with a large amount of data.
- FDM is a reproducible treatment.
- AACD has a simple technique.
- Changes in dorsiflexion restriction due to AACD are easy to measure.



caused the injury, but of equal intensity. For instance, in a continuum sprained ankle, the calcaneofibular ligament typically exhibits an everted continuum distortion because bony components were pulled into it when the ankle buckled laterally. If the CD occurs at the origin of the ligament, the direction of force from the treating thumb should be directed into the attachment of the ligament on the calcaneus (see below). However, if the CD occurs at the insertion of the ligament, the direction of force from the treating thumb should be directed into the attachment of the ligament on the fibula. In either case, the amount of treatment force should be significant because the force of injury was significant.

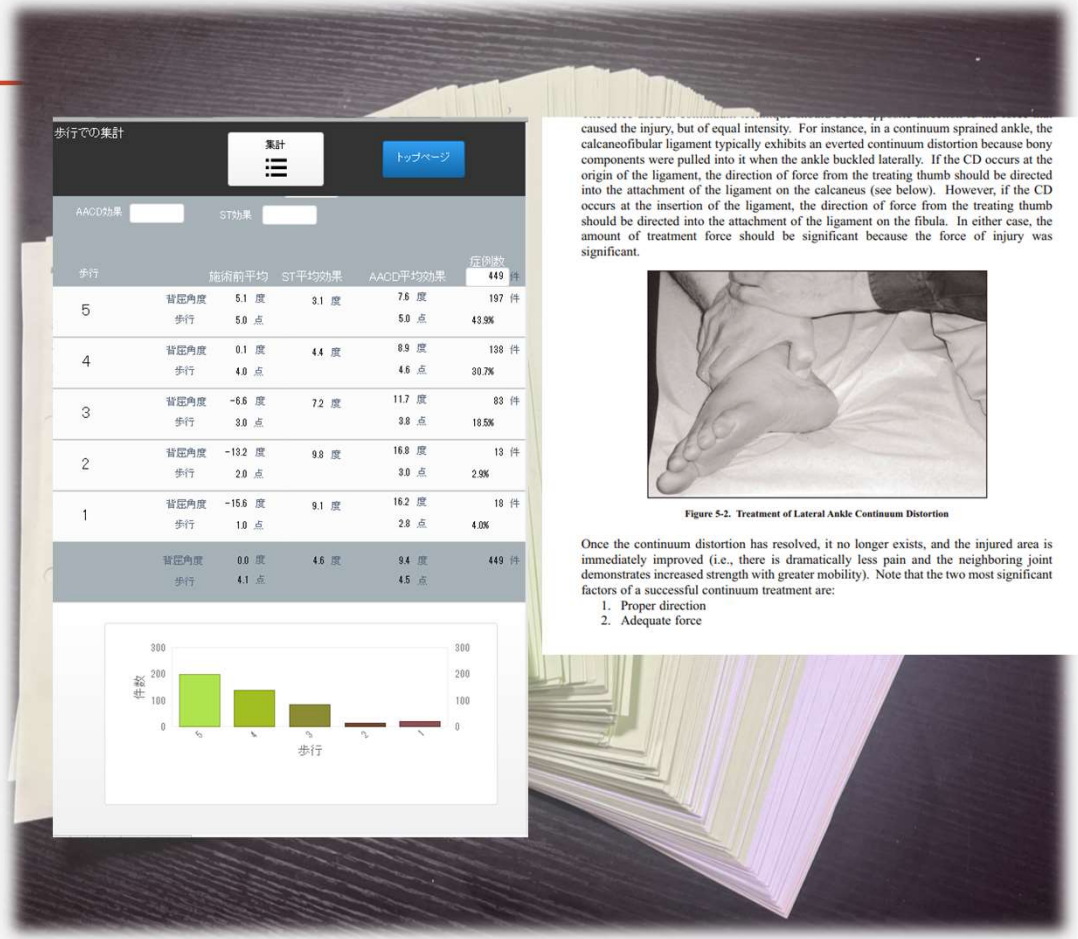
Figure 5-2. Treatment of Lateral Ankle Continuum Distortion

Once the continuum distortion has resolved, it no longer exists, and the injured area is immediately improved (i.e., there is dramatically less pain and the neighboring joint demonstrates increased strength with greater mobility). Note that the two most significant factors of a successful continuum treatment are:

1. Proper direction
2. Adequate force

Research Outline

- Objective: To investigate the effect of AACD on improving dorsiflexion angle
- Period: From November 2019 to the end of December 2020
- Number of cases: 507
- Number of patients: 317
- Participating medical institutions: 12
- For aggregate analysis of data, a database developed by Claris FileMaker 15 is used.



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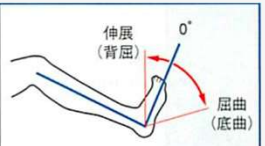
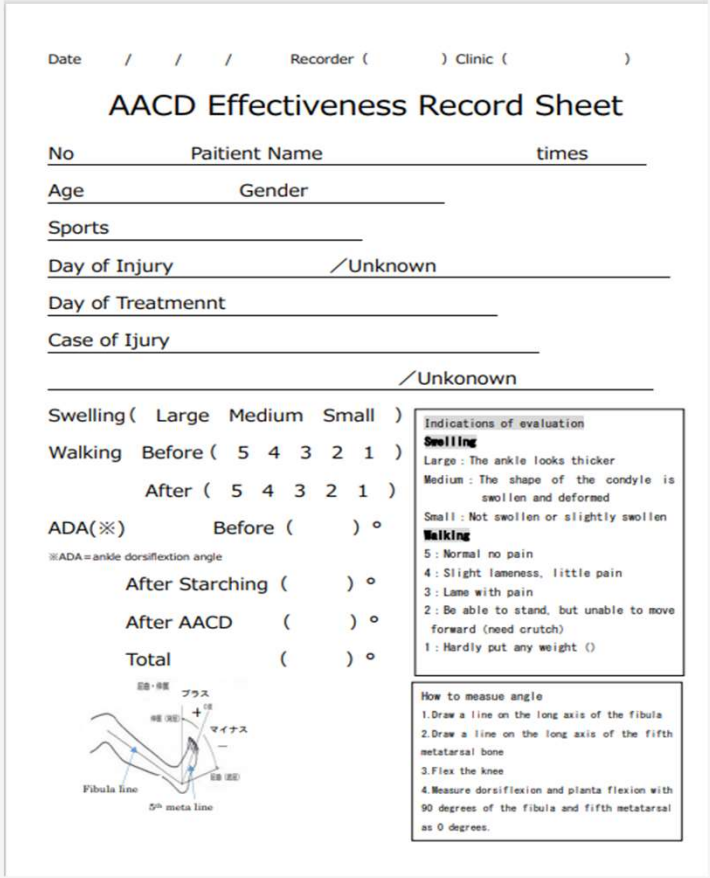
Claris FileMaker Go

Record Sheet

- Draw a line on the long axis of the fibula.
- Draw a line on the long axis of the fifth metatarsal.
- Flex the knees.
- The intersection angle of the long axis lines between the fibula and the fifth metatarsal bone is 90 degrees, measured as extension (dorsiflexion) and flexion (plantar flexion).

足 ankle	屈曲（底屈） flexion (plantar flexion)	45	腓骨への垂直線	第５中足骨	膝関節を屈曲位で行う。	
	伸展（背屈） extension (dorsiflexion)	20				

The Japanese Orthopedic Association,
The Japanese Association of Rehabilitation Medicine



Date / / / Recorder ( ) Clinic ( )

AACD Effectiveness Record Sheet

No Paitient Name times

Age Gender

Sports

Day of Injury /Unknown

Day of Treatmennt

Case of Ijury

/Unkonown

Swelling (Large Medium Small)

Walking Before (5 4 3 2 1)

After (5 4 3 2 1)

ADA(※) Before ( ) °

※ADA＝ankle dorsiflextion angle

After Starching ( ) °

After AACD ( ) °

Total ( ) °

Indications of evaluation

Swelling

Large : The ankle looks thicker

Medium : The shape of the condyle is swollen and deformed

Small : Not swollen or slightly swollen

Walking

5 : Normal no pain

4 : Slight lameness, little pain

3 : Lame with pain

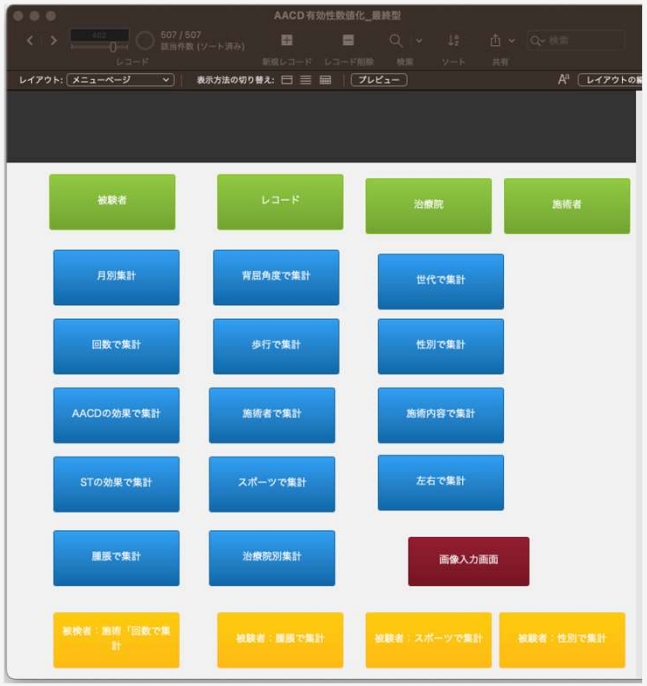
2 : Be able to stand, but unable to move forward (need crutch)

1 : Hardly put any weight ()

How to measue angle

1. Draw a line on the long axis of the fibula
2. Draw a line on the long axis of the fifth metatarsal bone
3. Flex the knee
4. Measure dorsiflexion and planta flexion with 90 degrees of the fibula and fifth metatarsal as 0 degrees.

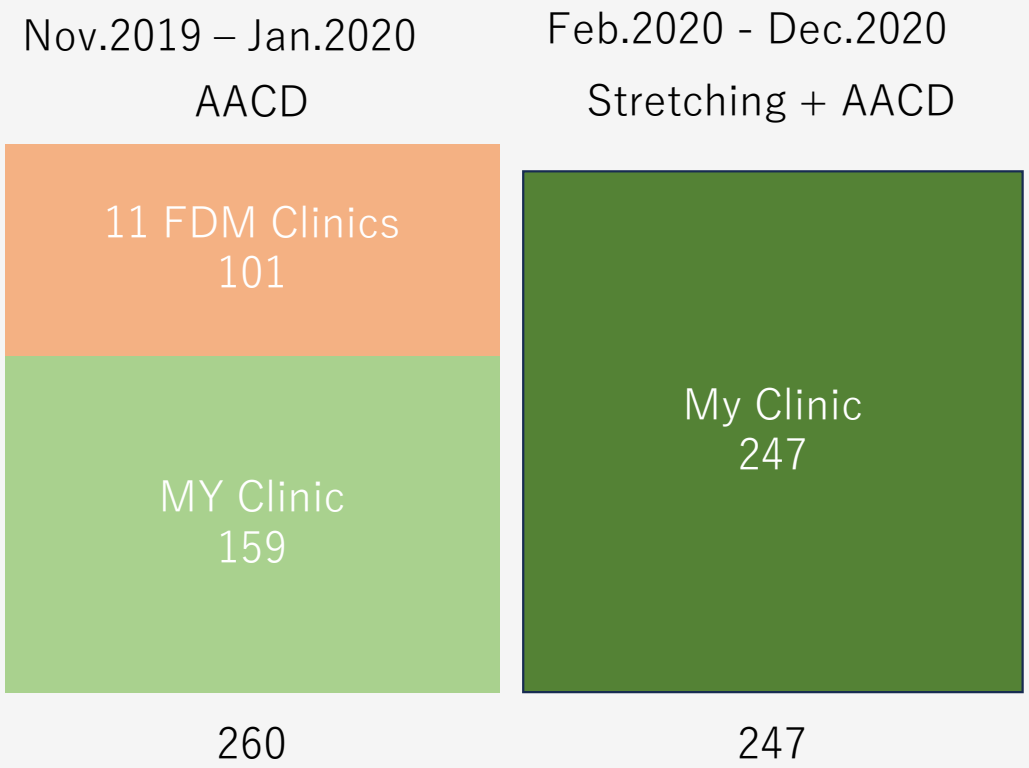
Database


AACD有効性数値化_最終型
レイアウト: メニューページ
プレビュー
被験者
レコード
治療院
施術者
月別集計
背屈角度で集計
世代で集計
回数で集計
歩行で集計
性別で集計
AACDの効果で集計
施術者で集計
施術内容で集計
STの効果で集計
スポーツで集計
左右で集計
腫脹で集計
治療院別集計
画像入力画面

AACD有効性数値化_最終型
レイアウト: レコード
プレビュー
カルテNO 20801
患者氏名 深川 健介
スポーツ 野球
年齢 16
世代 10
性別 男
負傷日 2020/11/01
施術日 2020/11/02
腫脹 中
左右 左
負傷原因
フライを取りに行く時に捻った。
施術内容 AACDとST
2020/11/02 1 中 4 -5.0 左
2020/11/05 2 中 5 10.0 左
エコー画像
外観画像

AACD有効性数値化_最終型
レイアウト: AACD効果で集計
プレビュー
AACDでの集計
集計
トップページ
AACD効果
腫脹
歩行
背屈角
ST効果
施術前平均
ST平均効果
AACD平均効果
症例数
507 件
-5〜-1 背屈角度 11.0 度 -5.0 度 -5.0 度 2 件
歩行 4.5 点 4.5 点 0.4%
0〜4 背屈角度 9.7 度 1.2 度 2.3 度 112 件
歩行 4.6 点 4.8 点 22.1%
5〜9 背屈角度 2.3 度 2.6 度 6.7 度 161 件
歩行 4.2 点 4.6 点 31.8%
10〜14 背屈角度 -0.9 度 4.2 度 11.2 度 126 件
歩行 4.1 点 4.5 点 24.9%
15〜19 背屈角度 -9.8 度 9.5 度 16.4 度 65 件
歩行 3.6 点 4.2 点 12.8%
AACD効果
件数
200
100
0
-5〜-1
0〜4
5〜9
10〜14
15〜19
20〜24
25〜29
30〜34
35〜40
角度

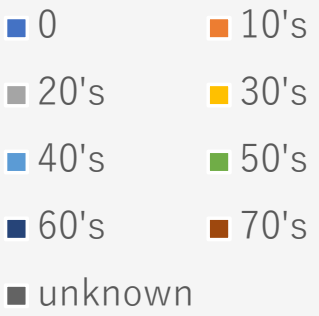
Two type of research

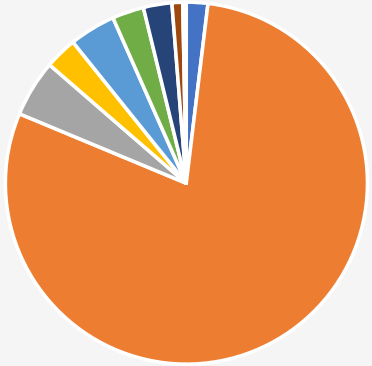


Total 507 cases

Subject Data

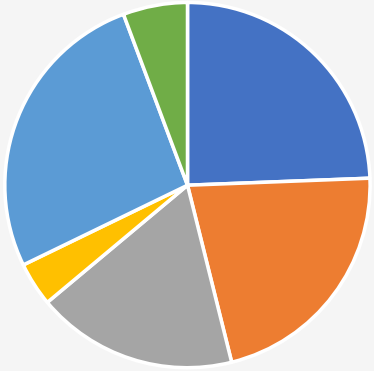
Age





Sports

Soccer	24.4%
Volleyball	21.7%
Basketball	17.8%
Baseball	3.9%
Other sports	26.5%
Non-sports	5.7%



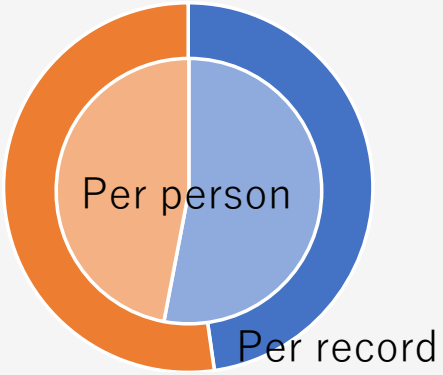
Gender

Per person (Inside)

Male 53% Female 47%

Per Record (Outside)

Male 47% Female 53%



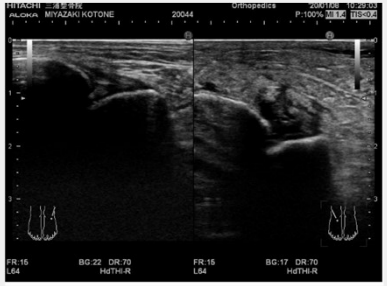
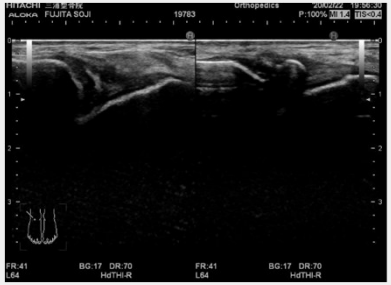
Left /Right

Right 52%

Left 42%

Unknown 42%

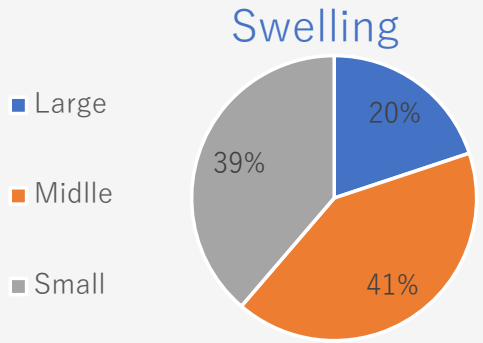
Evaluation of Swelling

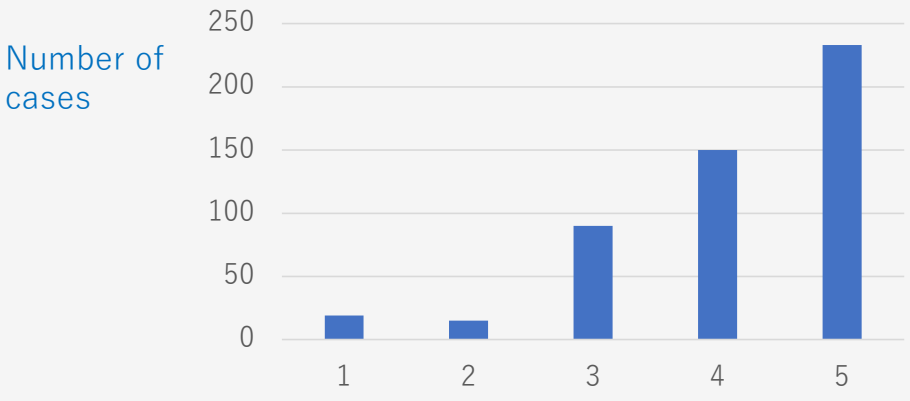
Large: Ankles appear thicker	Middle: The ankles are swollen and deformed.	Small: Slight swelling or no swelling.
		

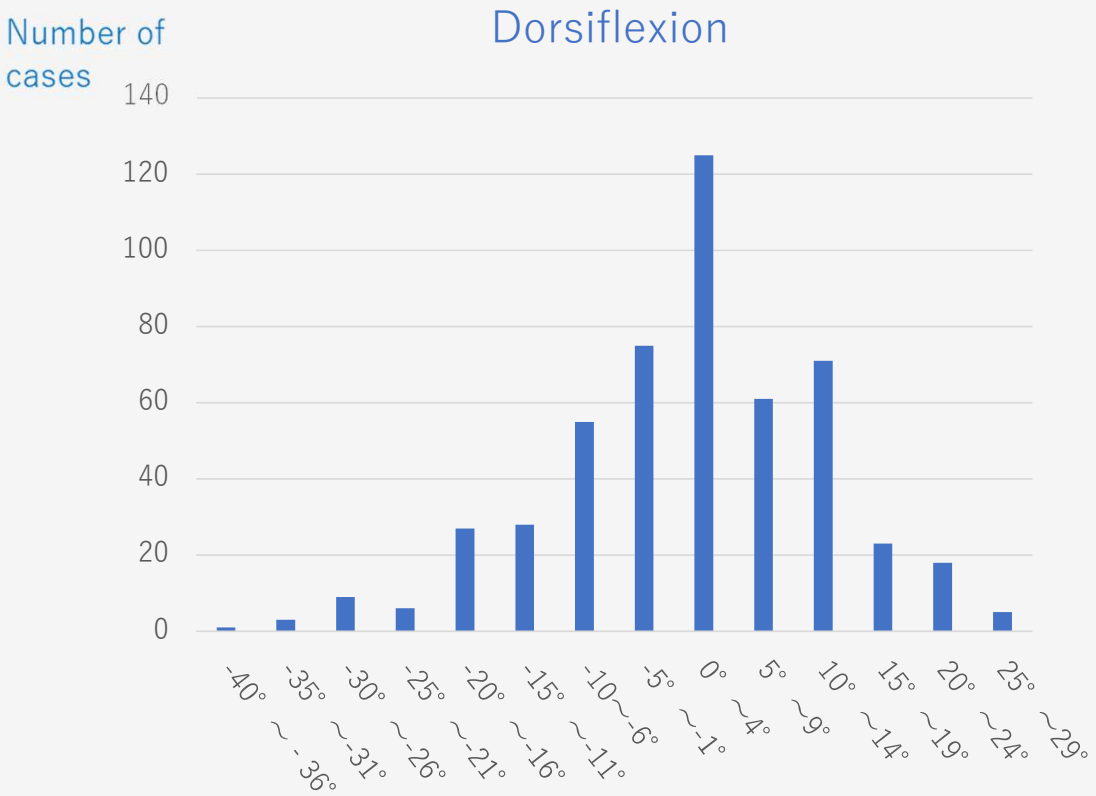
Gait Evaluation

Point	Gait	Crutch
1	Unable to place the foot on the floor.	◯
2	Able to stand but unable to move forward or walk.	◯
3	Walking with a limp and experiencing pain.	—
4	Slight limp and mild discomfort.	—
5	Able to walk normally.	—

Previous State of AACD

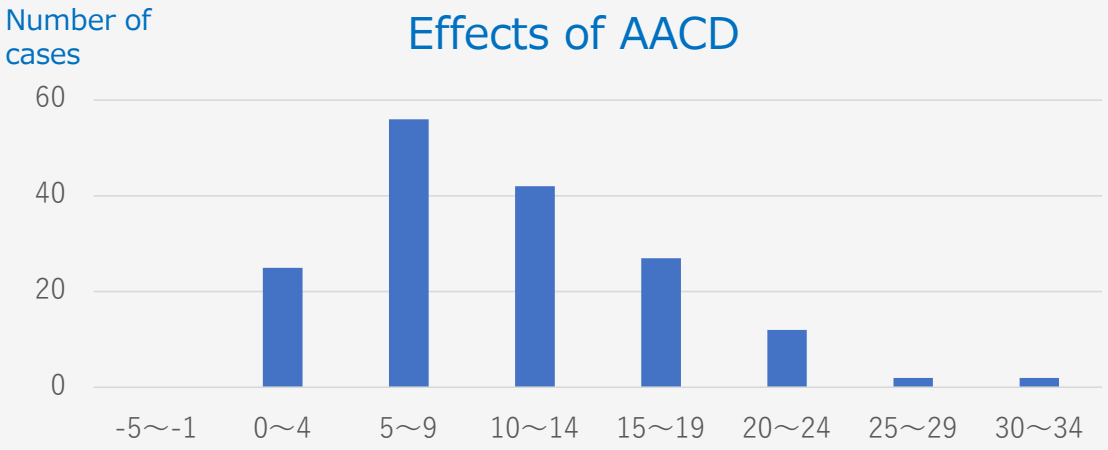






Effects of AACD

- The average effect of the first AACD was 10.4°
- Improvement of 1 degree or more was 98.7% of the cases.



Effects of the first AACD

Effects of AACD (°)	Number of cases	Rate
-5～-1	0	0.0%
0～4	25	15.1%
5～9	56	33.7%
10～14	42	25.3%
15～19	27	16.3%
20～24	12	7.2%
25～29	2	1.2%
30～34	2	1.2%
Average 10.4	Total 166	

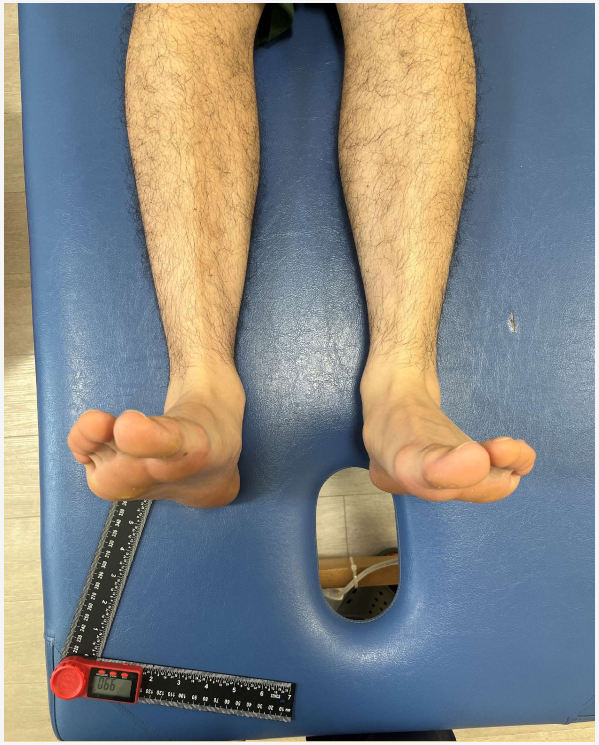
0<

98.7%

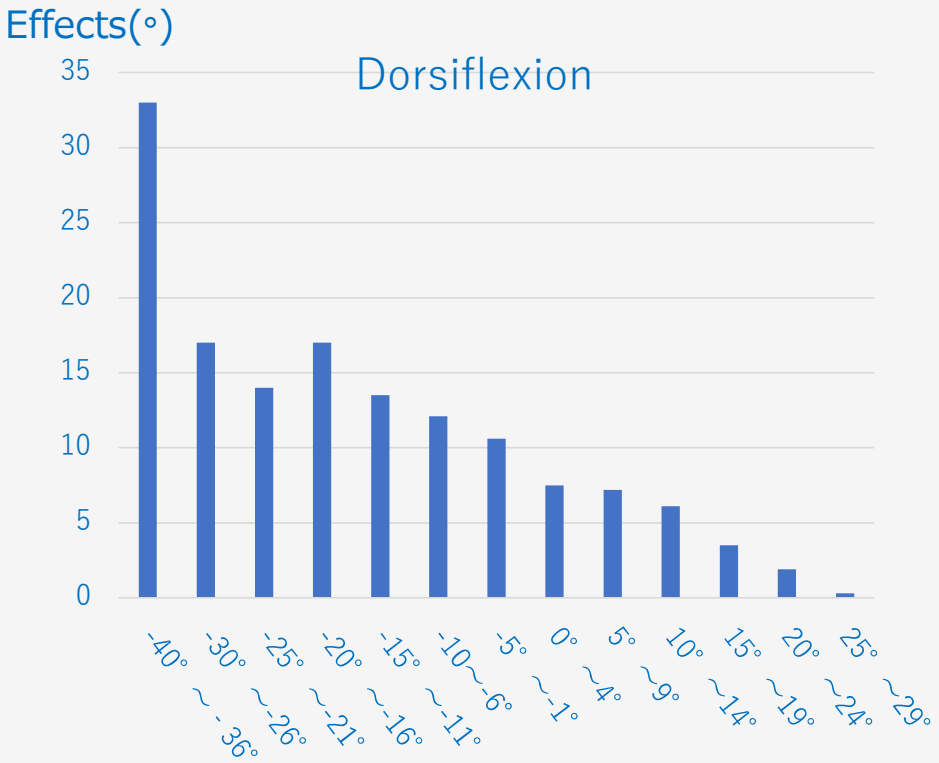
Changes in the **Photo**

Dorsiflexion 0.0°

Dorsiflexion 10.0°



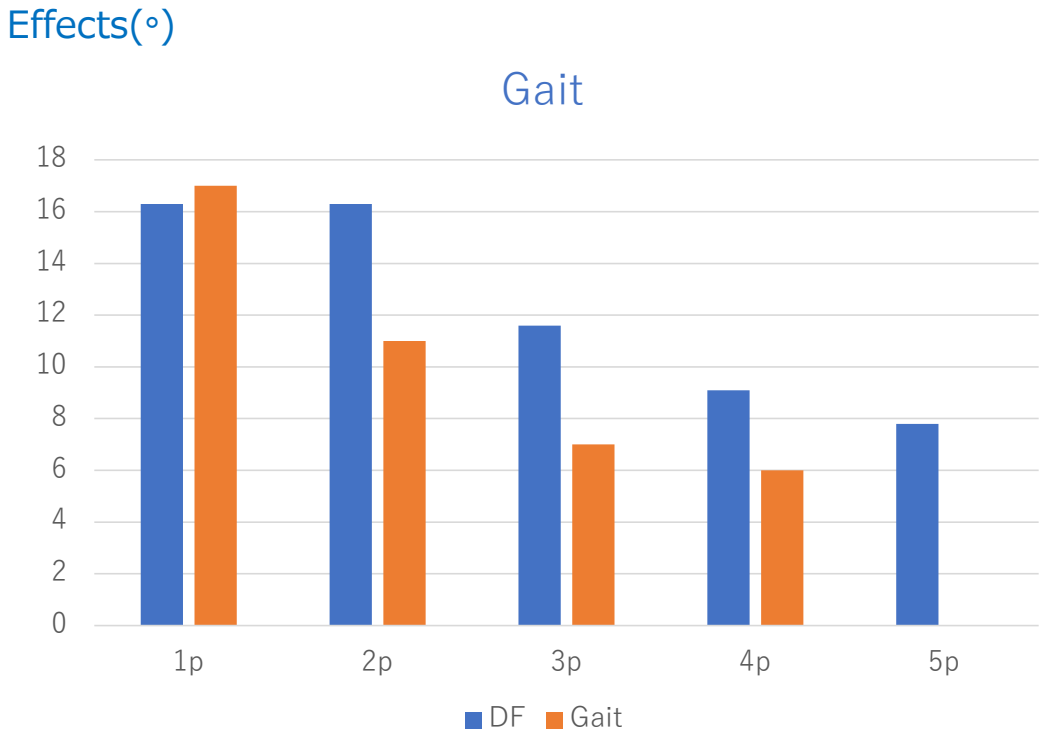
Improvement of Swelling and Dorsiflexion



Improved Gait

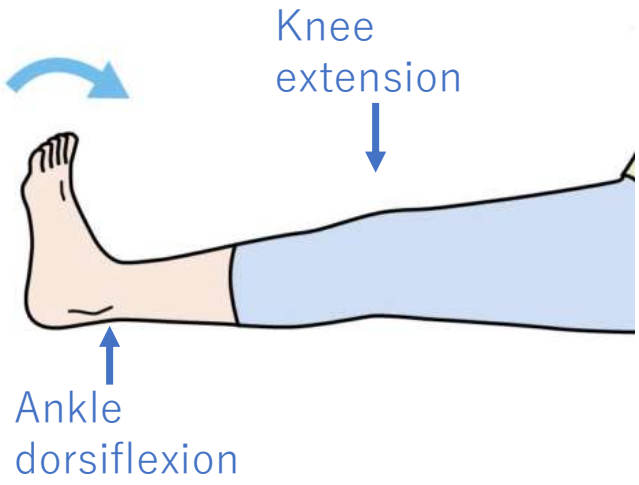
GP	DF (°)	Effects of AACD (°)	GP after AACD (°)	Crutch
5	5.2	7.8	5.0(±0.0)	-
4	-0.2	9.1	4.6(+0.6)	-
3	-6.1	11.6	3.7(+0.7)	-
2	-13.0	16.3	3.1(+1.1)	○
1	-16.2	16.3	2.7(+1.7)	○

GP: Gait Points
DF: Dorsiflexion



Comparison of the Effects of AACD and Stretching

How to stretch



	Effect of Stretching (°)	Effect of AACD (°)	Number of cases
AACD		9.0	260
Stretching +AACD	4.6	9.9	247

AACD is twice as effective as stretching.

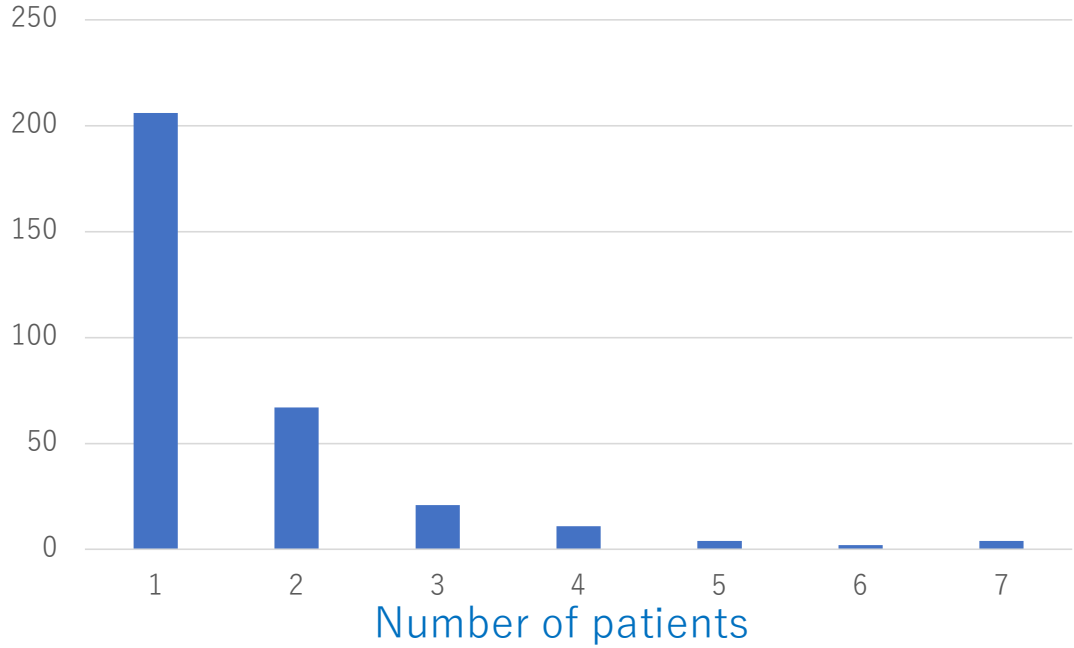
Influence of Practitioner Proficiency

	Years	Effect of AACD (°)	Number of cases
A	17 years	10.5	141
B	9 years	10.7	67
C	4 years	9.2	87
D	4 years	7.9	25
E	2 years	6.8	86

The effectiveness of AACD is influenced by experience and skill.

Number of Ankle Sprain Treatments

Times	Number of patients	Rate
1	206	65.4%
2	67	21.3%
3	21	6.7%
4	11	3.5%
5	4	1.3%
6	2	0.6%
7	4	1.3%

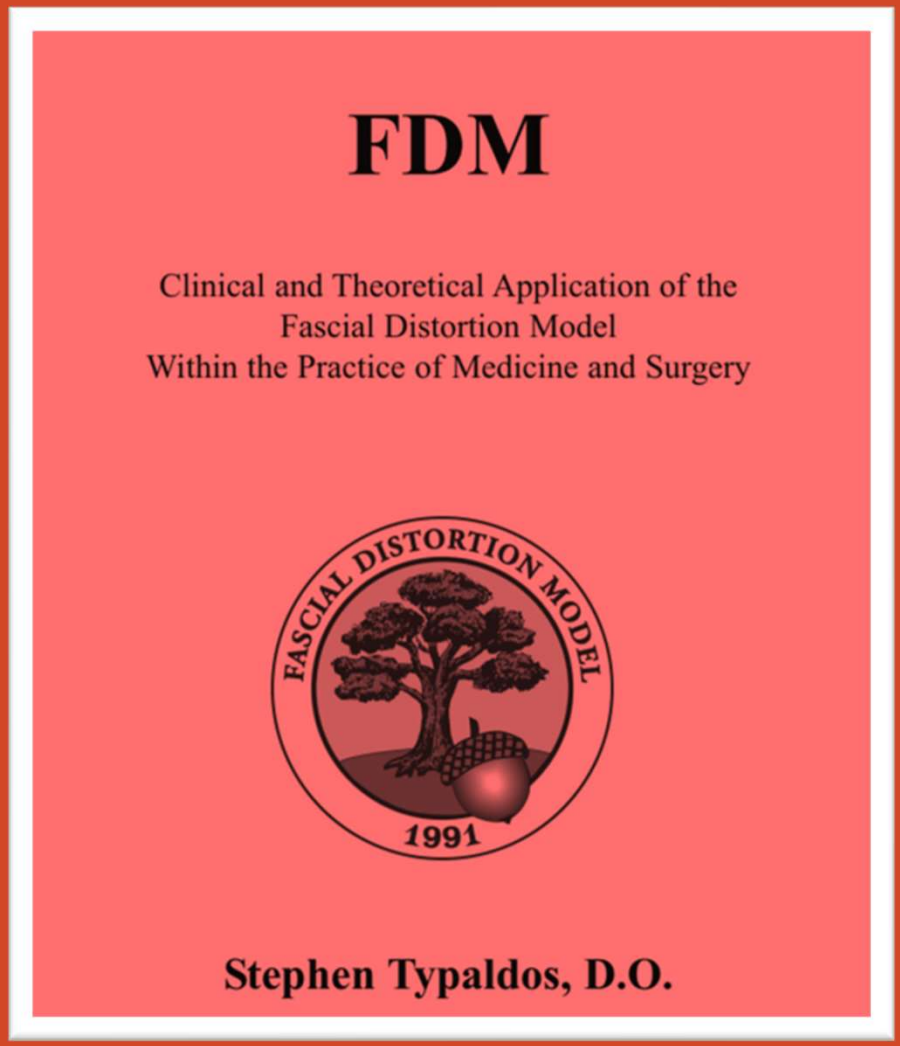


The effects of FDM are not temporary.
Average 1.6 treatments were required.

Summary

- AACD is 98.7% effective.
- AACD can improve dorsiflexion limitation by an average of 10°.
- AACD is about twice as effective as stretching.
- The average number of treatments is 1.6 times. Moreover, the effect is not temporary.

Effects of AACD

Insights from Data

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