

archelis

Removing strain  
from standing works



reddot winner 2020



DESIGN  
AWARD  
2020



GOOD DESIGN AWARD 2018

BEST 100

Medical

# Reduce the physical burden and improve work performance

Archelis can significantly reduce fatigue of doctors caused by standing for long periods of time by supporting their standing posture. Also, it can stabilize the trunk and maximize performance by distributing body weight and supporting it with shins and thighs.



# Why is Archelis good for your legs and back?



In addition to fatigue from standing, the weight load is concentrated on the lower body, resulting in foot pain.



Sitting in a chair rounds the back, distorts the pelvis, strains the lower back, and causes neck and shoulder fatigue.



By wearing Archelis, the ideal standing posture is maintained, reducing strain on the lower back and feet.

## Distributes and supports body weight

In the standing posture, weight load is concentrated on the soles of the feet, causing fatigue throughout the foot.

Archelis distributes the body weight to the thighs and shins for support, reducing the burden on the soles by up to 50%. Archelis relieves chronic pain and fatigue caused by prolonged standing works.



shin  
30%

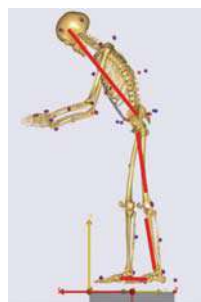
thigh  
20%

foot  
50%

\* Surface pressure dispersion (in-house study)



EMG measurement while standing works



without Archelis



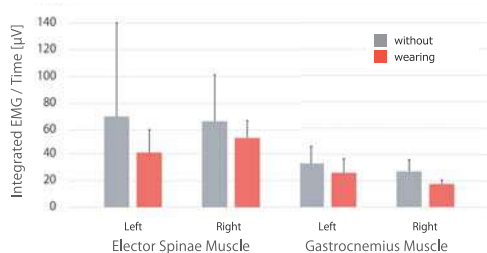
wearing Archelis

## Verification data of load reduction

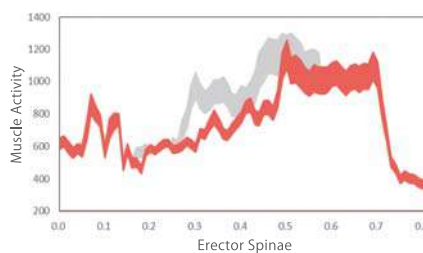
According to joint research with Ministry of Health, Labor and Welfare(MHLW), Archelis can reduce waist load compared to without wearing Archelis.

Muscle activity in the erector spinae and gastrocnemius muscles during standing work was found to be reduced by up to 41%.

Musculoskeletal modeling of the living body also showed that Archelis reduces the load on the lower back.



Demonstration Project for Safety and Health Equipment for Older Workers (2021, MHLW)



AnyBody Modeling System (Terrabyte Co., Ltd)

Feature

1.

## Freely walk and sit anywhere you want

Thanks to a wearable form and its structure individually separated into right & left, it enables to repeat "walk" and "sit" freely with wearing it.



Feature

2.

## No power supply needed

As no power supply is used, there is no radio wave interference with other medical devices and no need for charging. It can be used any time without any concern.



Feature

3.

## Easy to wear

It can be used immediately just by fastening three belts each foot, shin and thigh leg by yourself.



01 Adjust your heel to the device and fix your foot with a belt

02 Fix your shin with a belt

03 Fix your thigh with a belt



Archelis was born from the medical field.

In recent years, there has been remarkable evolution in medical technology. The laparoscopic surgery is also one of highly advanced medical technologies. While laparoscopic surgery significantly reduces physical burden on patients, surgeons and medical staff have to operate in standing posture for long hours, thus there are issues that the burden on their lower back and legs is increasing.

Under such circumstances, the actual reasons why they cannot operate with sitting on chairs are as follows.

The environment of operating room is designed to perform an operation in standing posture. The surgeons may change their positions depending on the areas and contents of treatment during the operation. Besides, many people work together on the operation - while various cables for medical devices lie on the floor, so no space can be secured for chairs.

Based on the actual situation of such surgical environment, the wearable chair "archelis" was developed with completely new concepts, taking advantage of the strength of medical-engineering collaboration and the industry-academia partnership to solve issues about physical burden of surgeons and medical staff caused by the standing posture for long hours.

Co-development partner



Hiroshi Kawahira

MD, PhD, FACS  
Professor & Director  
Medical Simulation Center  
Board Certified Surgeon  
in Gastroenterology  
School of Medicine  
Jichi Medical University

The ergonomic design of Archelis

To achieve the ultimate goal of "walk and sit" which seems contradictory, Archelis takes a new design approach. A crustacean-like exoskeleton makes it possible to support the body without stressing the muscles. The basic skeleton of Archelis is composed of functional shapes that are necessary and sufficient for "walk" and "sit" by eliminating superfluous structure.

That concept and functional beauty have been highly acclaimed worldwide, winning numerous design awards, including the Good Design Award (2018), the Red Dot Award (2020), and the iF Design Award (2020).

Designer



Hiroaki Nishimura

Hiroaki Nishimura Design Inc.

NEW



FX  
STICK

ArchelisFX Stick



FX  
RATCHET  
BUCKLE

ArchelisFX



METAL  
RATCHET  
BUCKLE

Archelis

The Lightest

Mobile & Stable

The Most Stable

Color



Weight  
(size M - one leg)

1.8 kg / 4.0 lb

2.1 kg / 4.6 lb

2.7 kg / 6.0 lb

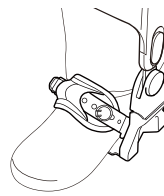
Material  
(thigh, shin)

Flexcarbon®

Flexcarbon®

Metal

Foot structure



Max. load wight

~115 kg / 254 lb

~115 kg / 254 lb

~90 kg / 198 lb

Mobility



Wearability



Material (thigh, shin)

FX

Lighter by far

Flexcarbon® is strong and light fiber-reinforced plastic and enables 25% lighter compare to metal.

Foot structure

STICK

Evolved walkability

Redesigned stick structures free your ankles and enable you to walk smoothly and silently.

METAL

Stable & secure

Metal structure makes you feel stable and secure. It enables a stable hands for precision work.

RATCHET  
BUCKLE

Easy to wear

Same as ski boots, it is easy to put on and pull off. It fixes your shoes properly and is stable.

# Product Specification

NEW



Product name	ArchelisFX stick	ArchelisFX	Archelis
Product code	arFXS001-S (Size S) arFXS001-M (Size M) arFXS001-L (Size L)	arFX001-S (Size S) arFX001-M (Size M) arFX001-L (Size L)	ar001-S (Size S) ar001-M (Size M)
Material (thigh, shin)	Flexcarbon® <sup>※1</sup>		Metal
Wearable height	1.45-1.65 m (Size S) 4'9"-5'5"ft (Size S) 1.60-1.85 m (Size M) 5'3"-6'1"ft (Size M) 1.70-1.95 m (Size L) 5'7"-6'5"ft (Size L)		1.45-1.65 m (Size S) 4'9"-5'5"ft (Size S) 1.60-1.85 m (Size M) 5'3"-6'1"ft (Size M)
Max. load weight	65 kg / 143lb (Size S) 90 kg / 198lb (Size M) 115 kg / 254lb (Size L)		65 kg / 143lb (Size S) 90 kg / 198lb (Size M)
Dimension (one leg)	17.5 x 28.0 x 71.5 cm (Size S) 6.9 x 11.0 x 28.1inch (Size S) 17.5 x 28.0 x 78.5 cm (Size M) 6.9 x 11.0 x 30.9inch (Size M) 17.5 x 28.0 x 82.3 cm (Size L) 6.9 x 11.0 x 32.4inch (Size L)		17.5 x 28.0 x 71.5 cm (Size S) 6.9 x 11.0 x 28.1inch (Size S) 17.5 x 28.0 x 78.5 cm (Size M) 6.9 x 11.0 x 30.9inch (Size M)
Weight (one leg)	1.7 kg / 3.7lb (Size S) 1.8 kg / 4.0lb (Size M) 1.9 kg / 4.2lb (Size L)	2.0 kg / 4.4lb (Size S) 2.1 kg / 4.6lb (Size M) 2.5 kg / 5.5lb (Size L)	2.3 kg / 5.1lb (Size S) 2.7 kg / 6.0lb (Size M)
Color	Carbon black		Black / White <sup>※2</sup>
Accessory	Dedicated stand		

※1 Flexcarbon® is strong and light fiber rein-forced plastic developed by Suncorona Oda Co., Ltd.

※2 The color of the model shown in the picture is White.

<https://www.archelis.com/en>

Distributor (contact for inquiries)

Specifications and appearance are subject to change without notice for improvement.  
Product colors may appear different from actual colors due to photography and printing inks.

Patented  
Made in JAPAN

Archelis Inc.

ar0637