PhysioBiometrics Inc.

Views from the Docking Station

PHYSIO BIOMETRICS INC

We produce accessible technologies to help people move BETTER to move MORE

Heel2Toe

Walk-BEST

Class I Medical Device

Innovation Team

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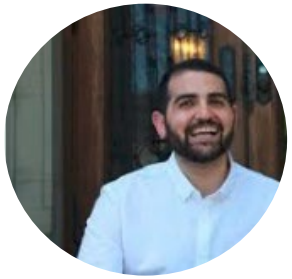

VP Clinical Services
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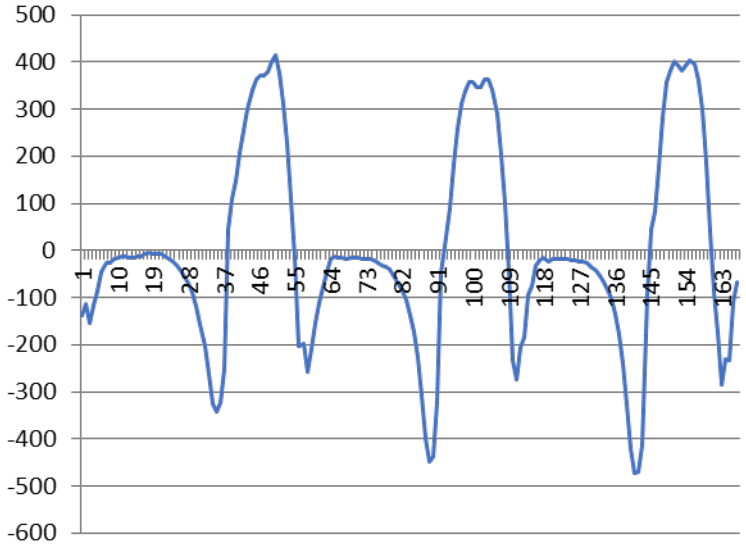
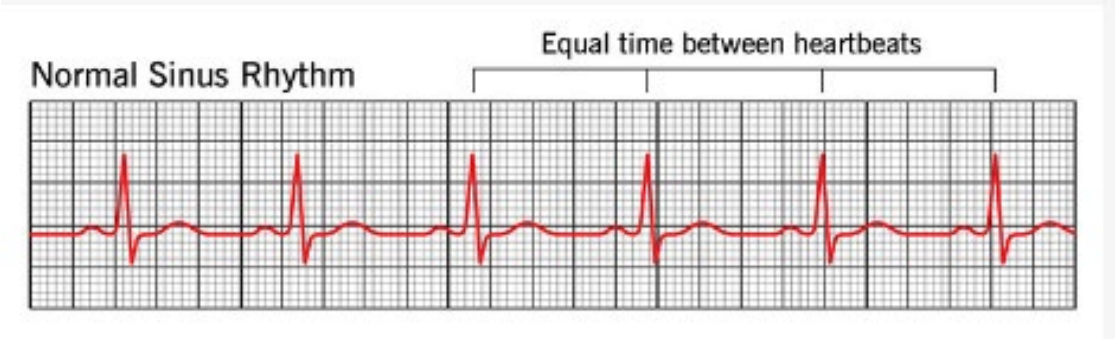
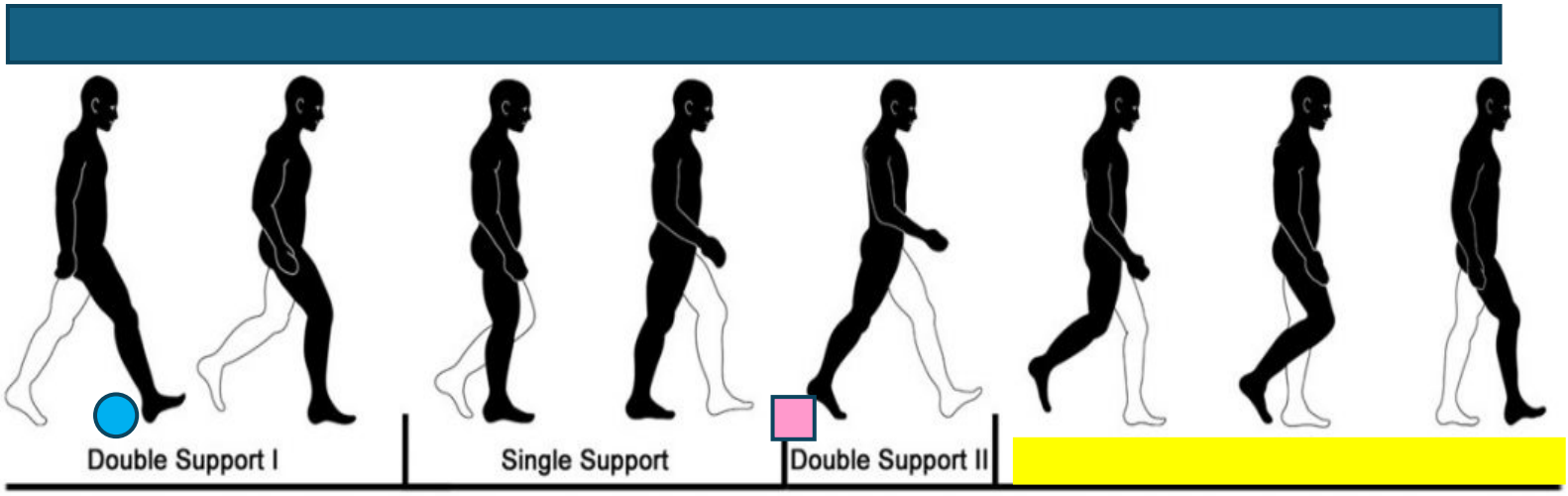
There is only one way of walking

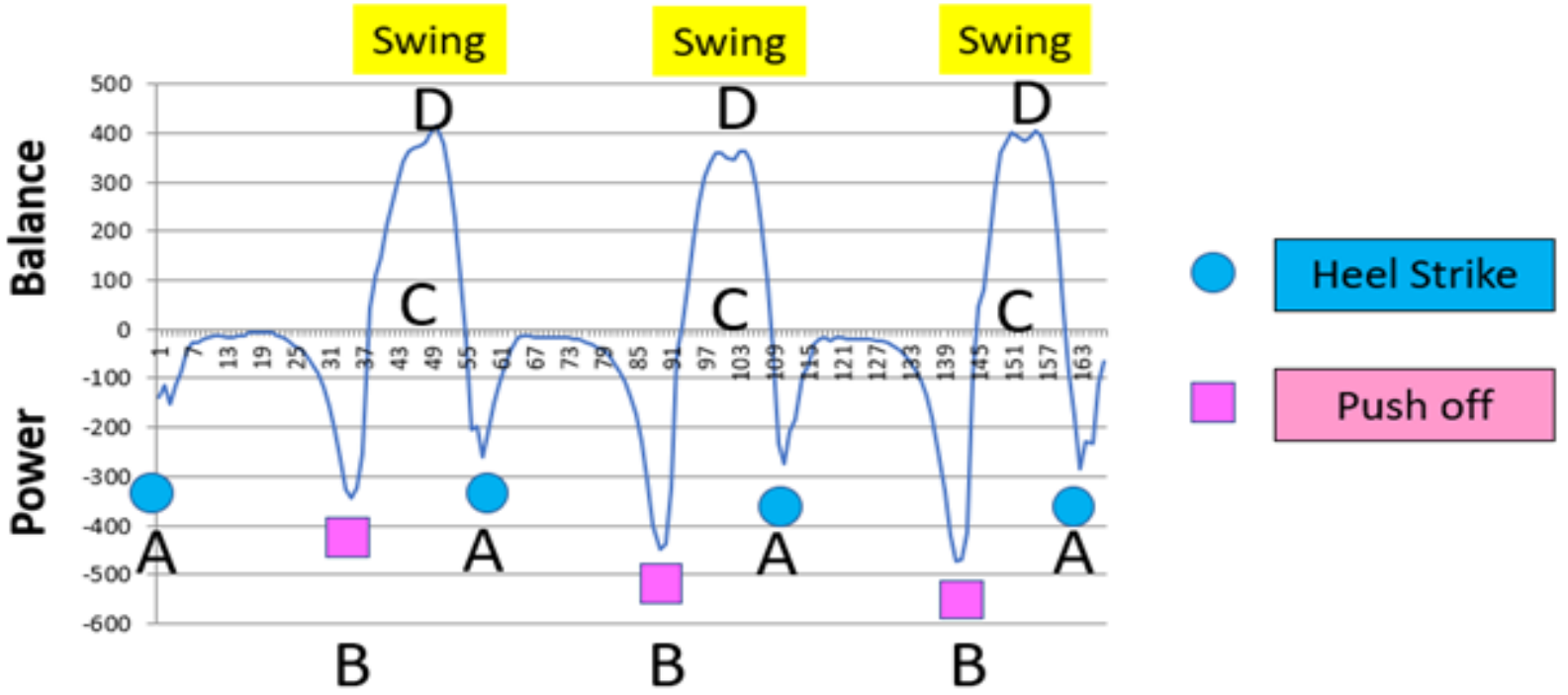
Gait Trace



ECG




Double Support I
Single Support
Double Support II


Swing
Swing
Swing
Balance
Power
D
C
A
B
Heel Strike
Push off

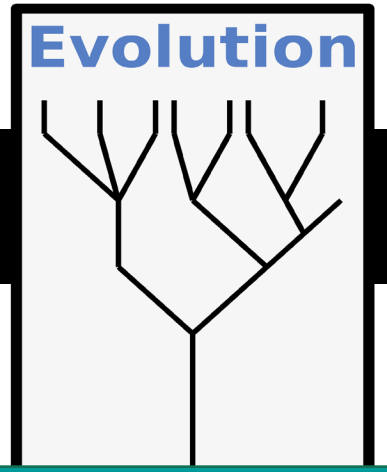
Why walk?

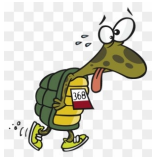
Benefits of Walking are Enormous

- Most valued activity contributing to quality of life
- Good for the body and good for the mind
  - Low to moderate intensity exercise level that can be sustained to allow physiological benefits to be realized
  - Builds reserve, relieves stress and fatigue, improves mood
  - Available to all / low expense / no specialized equipment

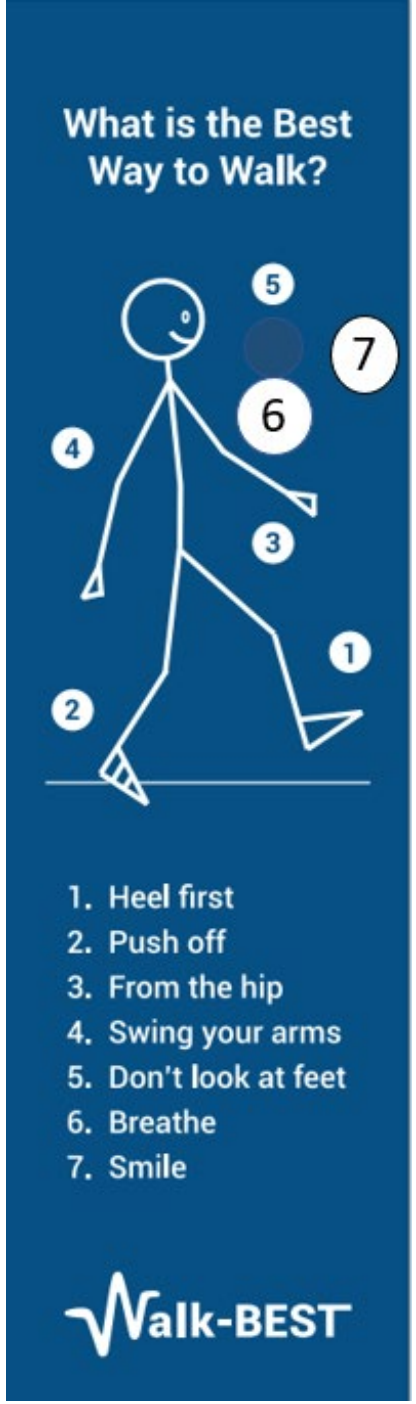
Walk-BEST

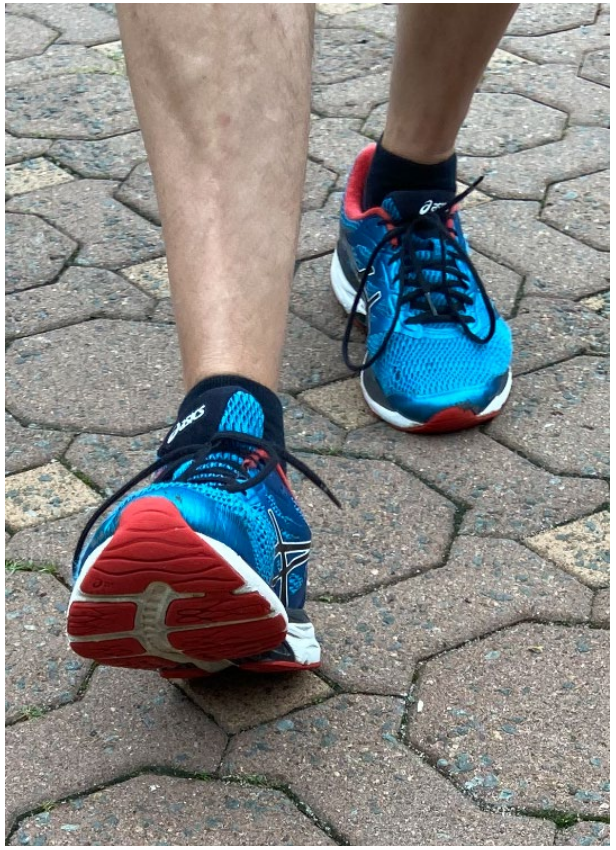
The optimal walking pattern: a process of





Cover the greatest distance, in the least time, safely, and with the least amount of energy expenditure, physically or cognitively





Show your sole

From the hip

>1/10 people cannot walk well enough to reap the health and quality of life benefits of walking

--- with age this proportion is as high as 1 in 2 ---

Poor walking places people at high risk of falls as most falls occur while people are walking

Older people and people with neurological disorders are at highest risk

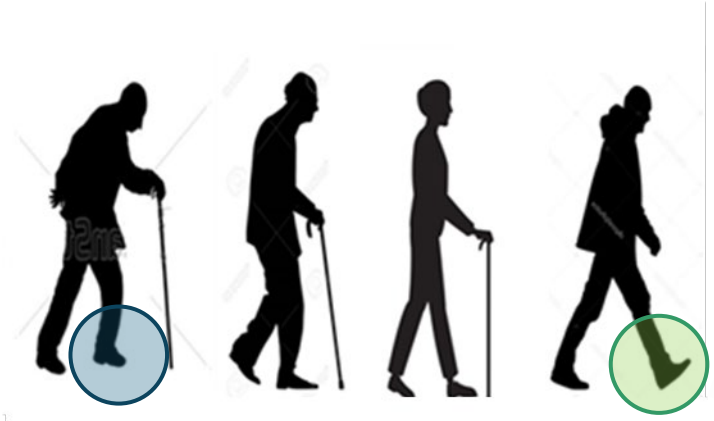
Falls can be devastating,
costly and even fatal

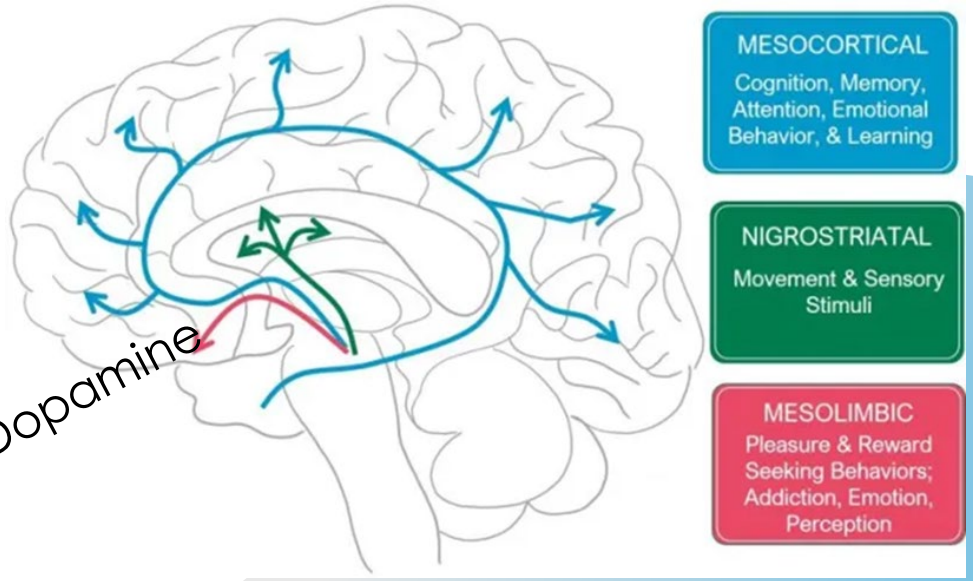
Why people fall?

- Weak leg and core strength
- Lack of control of center of mass
- Lack of flexibility
- Narrow base of support
- Poor reflex engagement of arms

Heel2Toe harnesses the power of the brain to provide therapy in every step

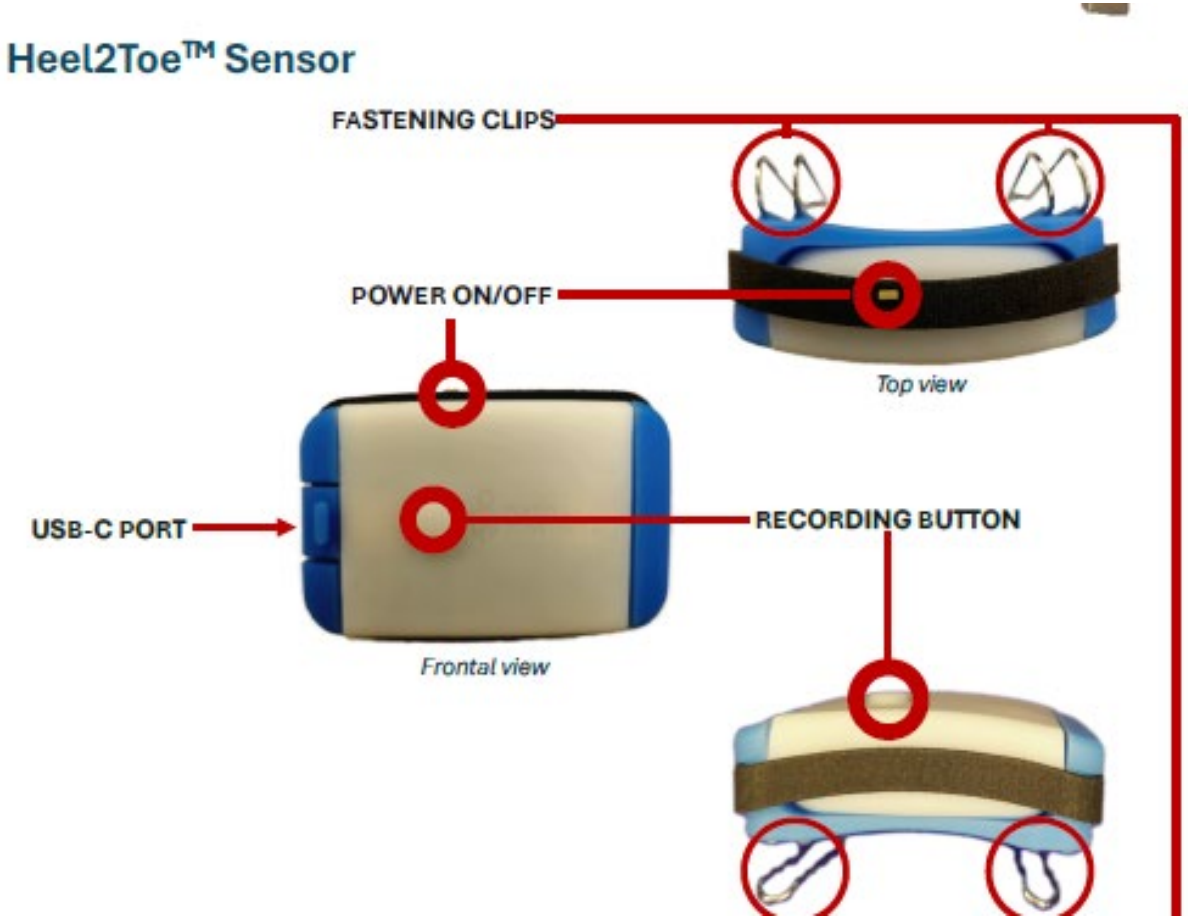
Detects and quantifies step quality and provides real-time auditory feedback for a "good step"





Focused practice 6 min 2x per day

Get Started



- Attach
- Press on
- Press record

Calibrate

Step 1: Fasten the Heel2Toe™ on the outside of your left or right shoe.
Step 2: Stand still - do not move your foot.

If the Heel2Toe™ sensor is on your…	**RIGHT FOOT**	**LEFT FOOT**
Press the RECORDING button	1 time	2 times
You will hear…	4 short beeps + 1 long beep indicating calibration is complete	
LED will stay…	PURPLE	ORANGE

Get Walking

- Walk (5 to 6 minutes)
- Stop
- Press off
- Plug in to device
- Download data to docking station

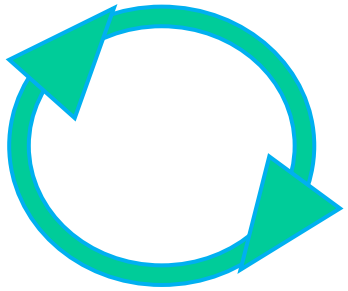
Views from the Docking Station

https://physiobiometrics.com/products/

What we measure?

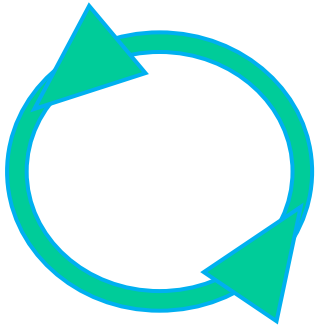
Heel strike

Push-off



Clockwise movements of the ankle have negative values (bigger numbers better)

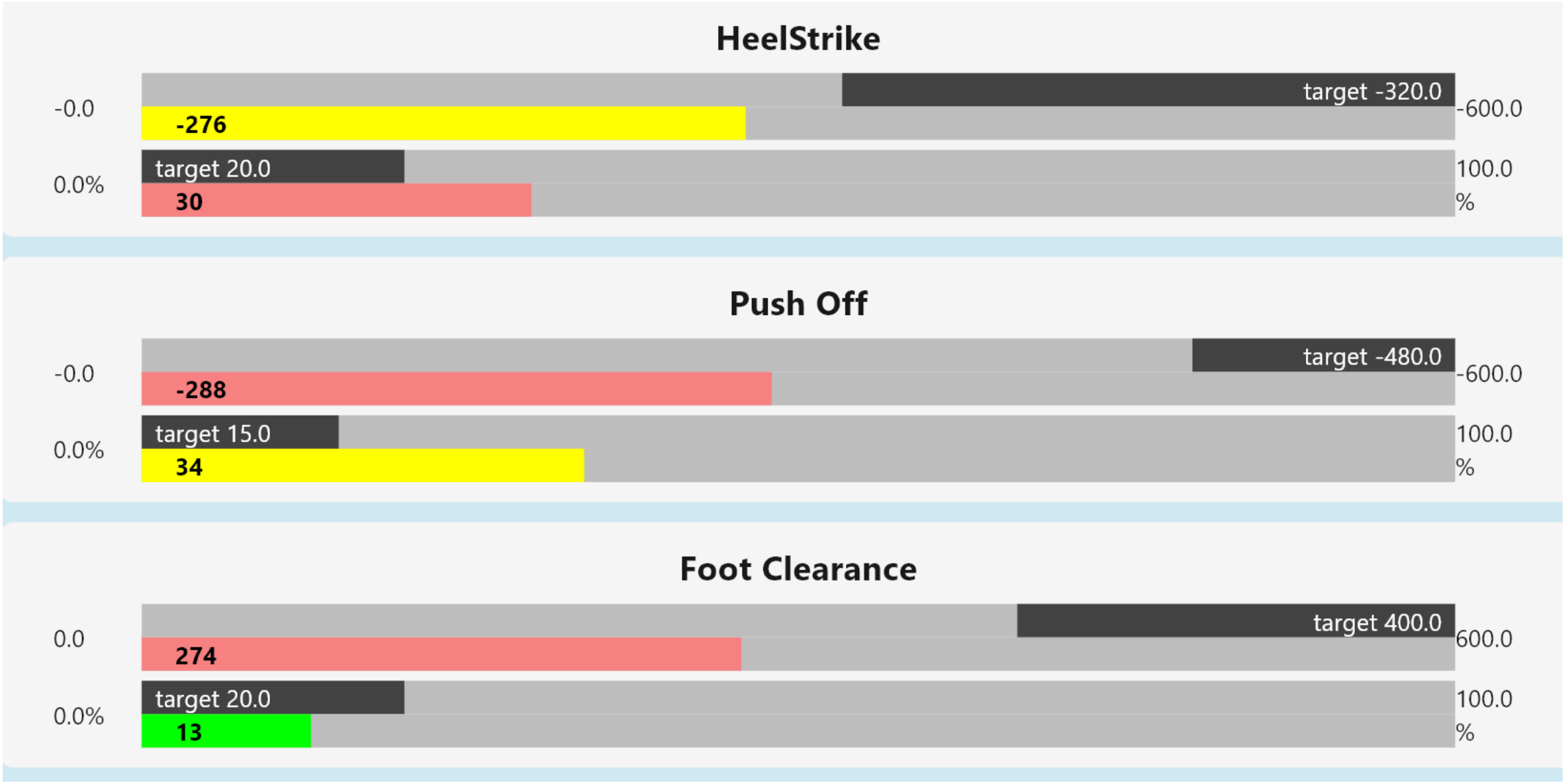
Foot swing



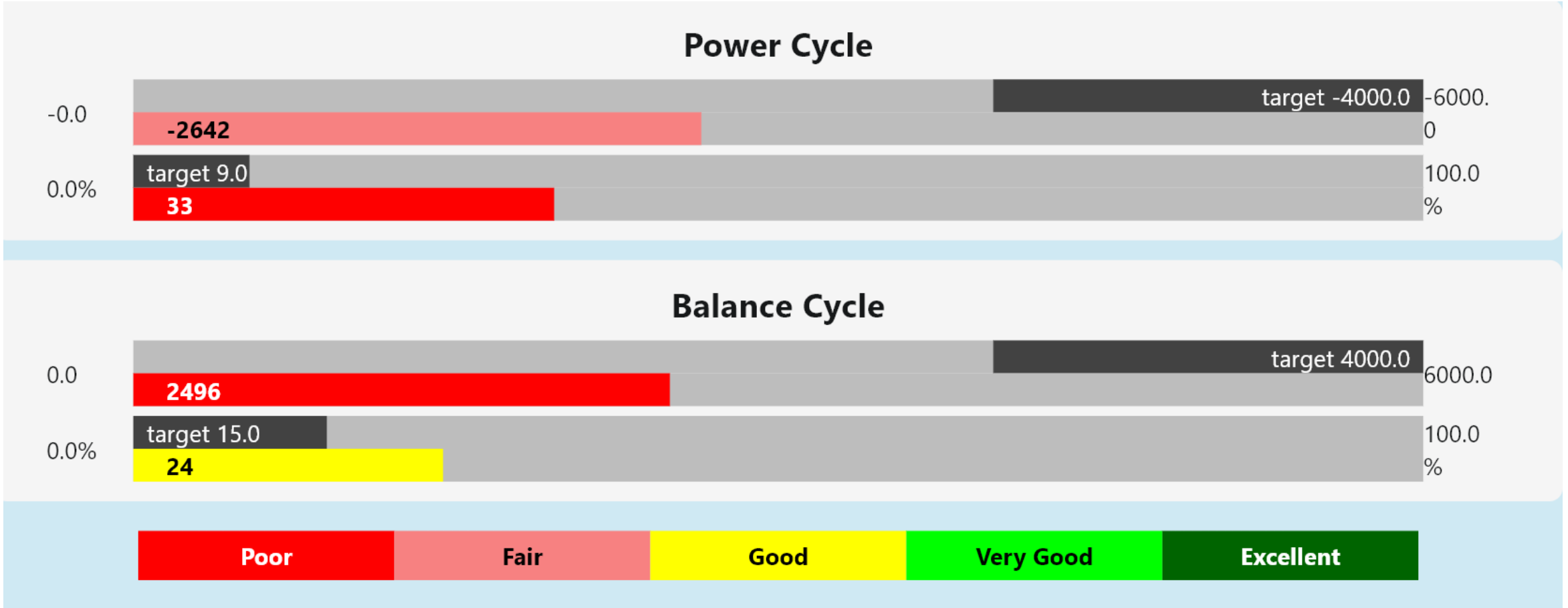
Counter-clockwise movements of the ankle have positive values (bigger numbers better)

VIPs

- A strong heel-strike, push-off, and foot swing are the key to BEST walking.
- Values are in degrees/sec and are averaged over all steps in a walking session
- The amount of variability across steps is also given (%) and lower is better
- Heel strike and push-off generate negative numbers
- Foot swing generates positive numbers
- Aim for the green

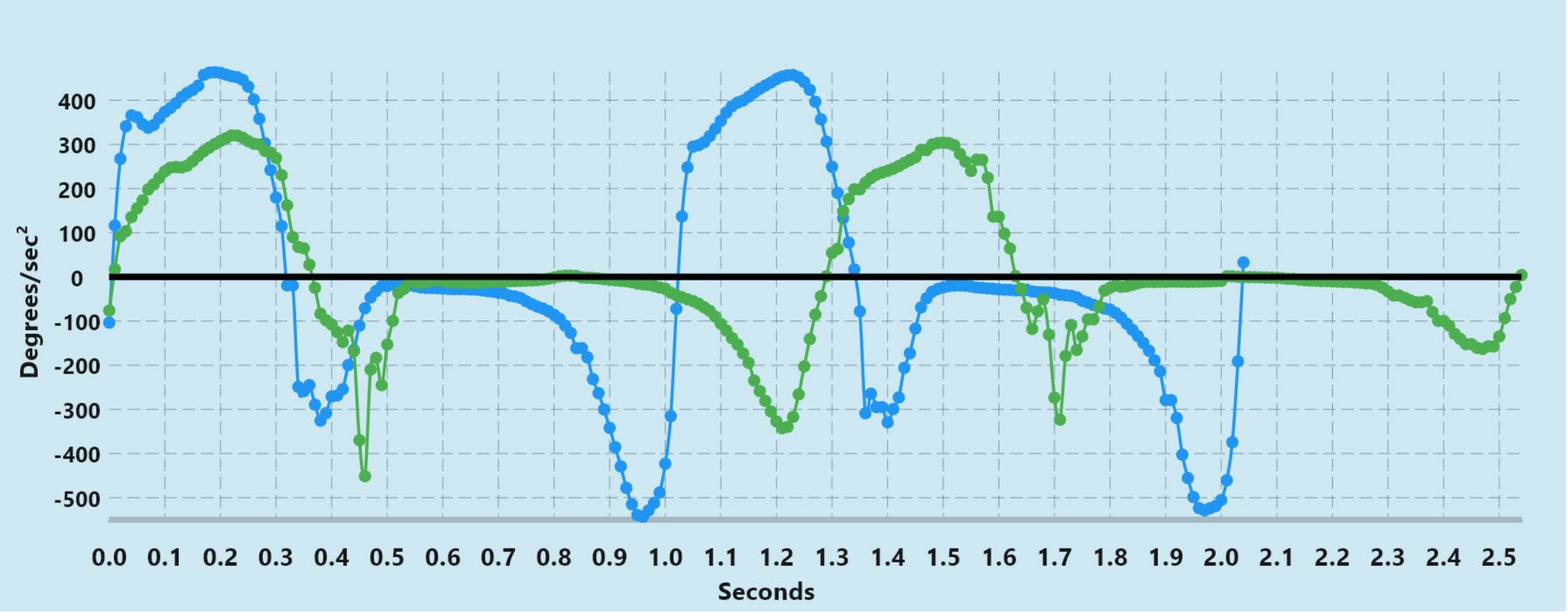


All values are averaged over all steps in a walking. The top bar is the magnitude of the speed of rotation and bottom bar is the amount of variability over all the steps.



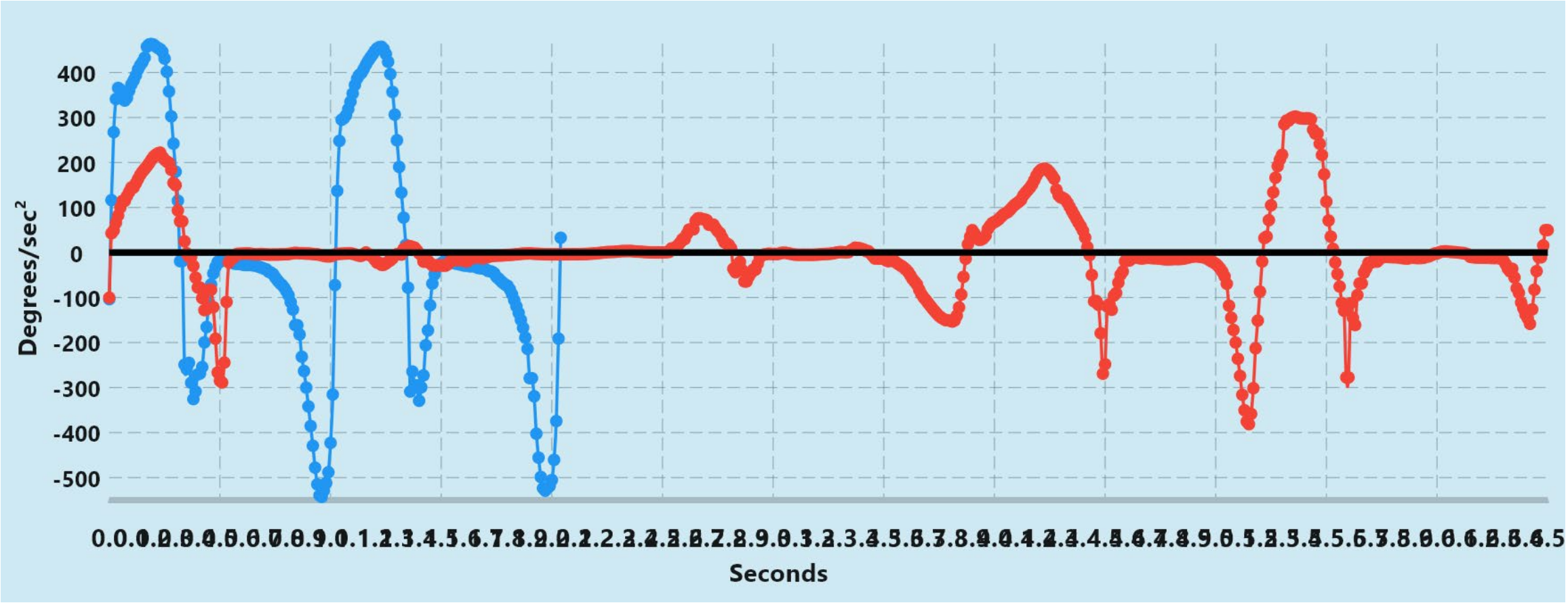
Power cycle reflects the combination of heel-strike and push-off as these parts of the gait cycle propel the body forward.
Balance cycle reflects how much time the swinging foot is off the ground indicating how much time the walkinger is standing only on one foot.

Gait Compare



This picture shows an **optimal step** and the person's **best step**. This shows what the person is capable of and indicates where improvements can still be made.

Gait Compare



This picture shows the person's **poorest step** and illustrates that poor walking can be dangerous as the foot can scuff and cause a trip or a fall.

Cadence

Category	Steps/minute	Client Value
Fast	>120	
Brisk	100-120	
Medium	80-100	93
Slow	60-80	
Purposeful	40-60	
Incidental	0-40	

This picture shows how the rhythm of walking in steps per minute. Taking 80 to 120 steps per minute is the safest rhythm. It is linked to gait speed depending on how long the stride is. A person can take a lot of very tiny steps in a minute and not cover a lot of ground. Or a person can take fewer steps per minute but each strike is long so they cover a lot of ground.

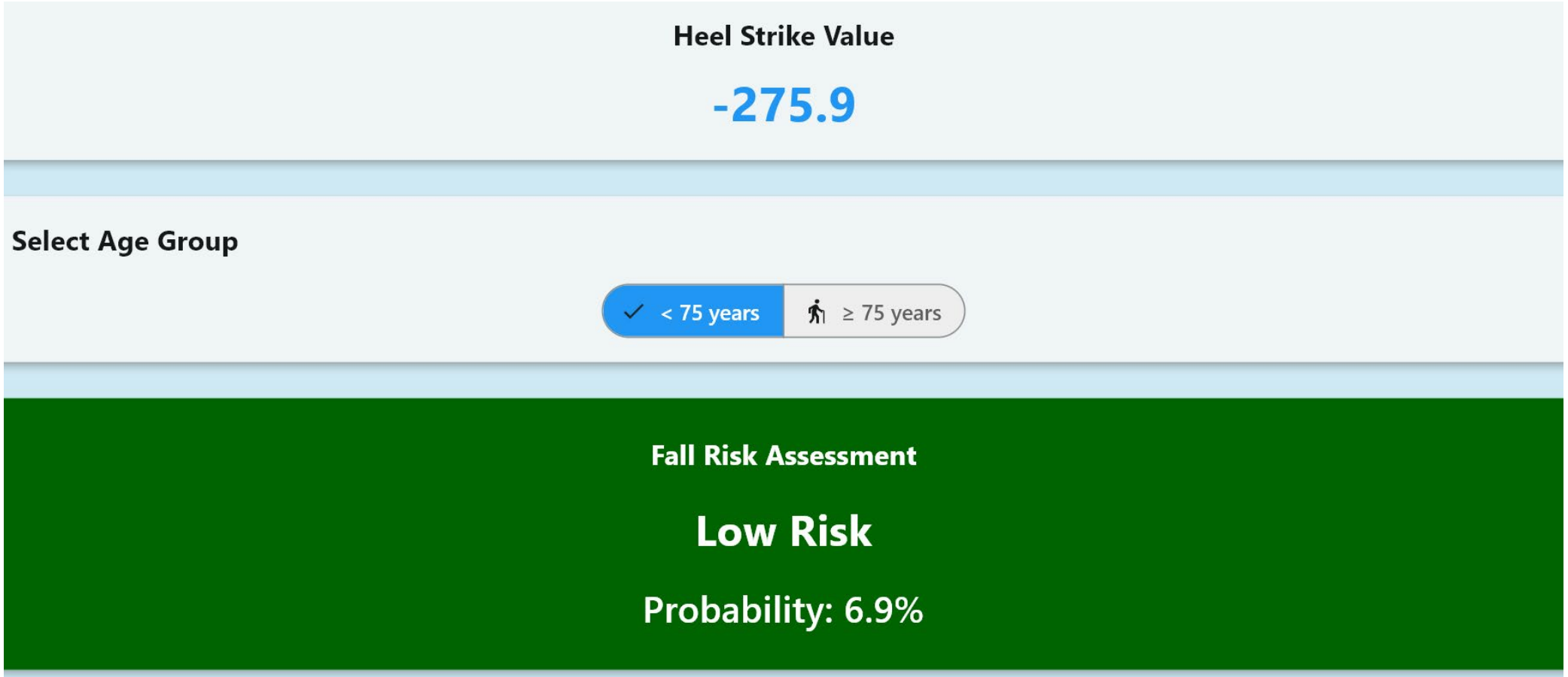
Fatigue

Gait Quality Marker	Average	T-value
BalancePhase	2495.65	no change
FootSwing	273.92	no change
FootSwingWidth	0.44	no change
HeelOffPower	-287.82	no change
HeelStrike	-275.93	no change
PowerPhase	-2641.63	no change

Worsen over session | **Improved over session**

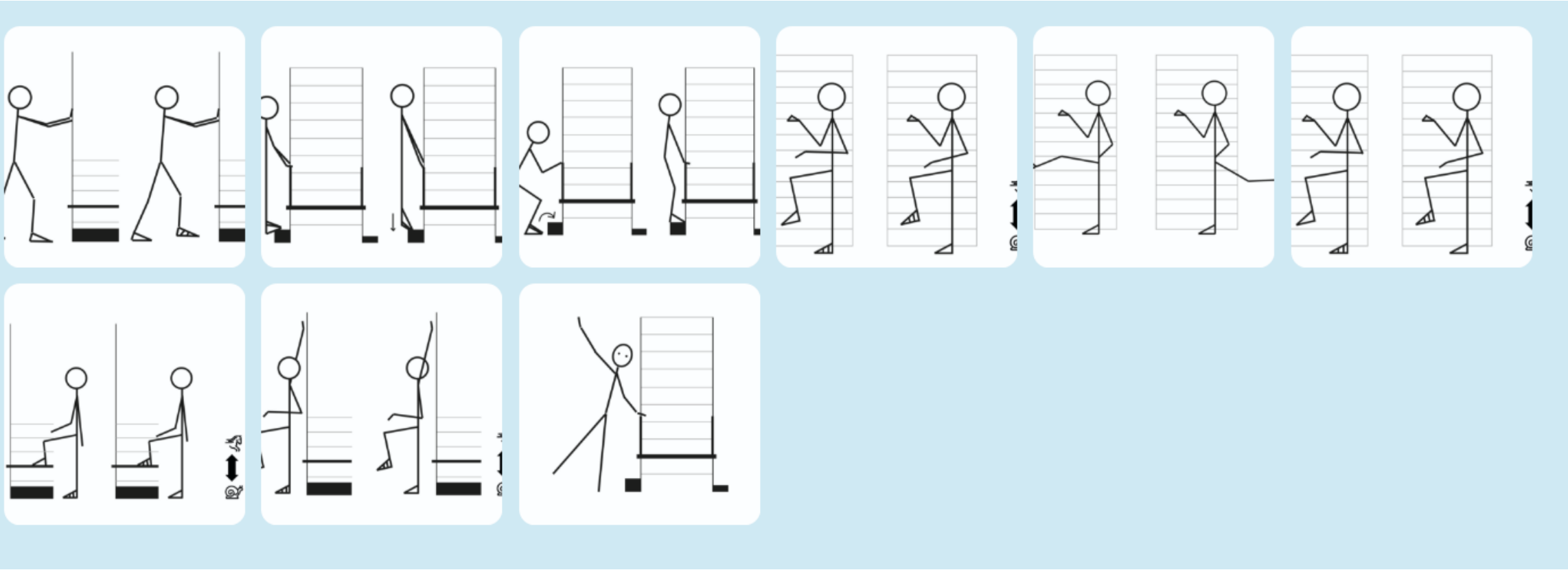
This picture shows what happens to the gait pattern over time because when walking for a long period fatigue can affect gait and result in a trip, fall, or mis-step. This person is staying the same over time which is good.

Fall Risk



This picture shows the probability that walking with their gait pattern could lead to a fall. As this person's heel strike is -276^{O}/sec and they are under 75 years of age, their probability is near 7%.

Prepare to Walk-BEST: Recommended Exercises



This picture shows exercises that are recommended for this person based on their gait metrics.

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Walk-BEST with Heel2Toe