

WHY BEING ACTIVE IS THE SINGLE BEST THING YOU CAN DO TO AGE WELL WITH HIV

Margaret Danilovich, PT, DPT, PhD

CJE SeniorLife

Senior Director - Leonard Schanfield Research Institute

Adjunct Assistant Professor

Northwestern University

MARGARET.DANILOVICH@CJE.NET



@MARGARETDPTPHD



Slow

Low

WHAT HAPPENS WITH AGING?

MUSCLE

Loss of lean body mass

Reduced joint range of motion

Reduced bone density

Postural changes

NEUROLOGIC

Decreased sensation

Center of pressure moves posterior

Neurocognitive changes

PULMONARY

Decreased lung volume and capacity

Decrease in Vo2 max

CARDIOVASCULAR

Vessel stiffness

Heart wall thickening

WHAT HAPPENS WITH HIV?

MUSCLE

Loss of lean body mass

Fat redistribution

Reduced bone density

Postural changes

NEUROLOGIC

Peripheral neuropathy

Decreased sensation

Center of pressure moves
posterior

Neurocognitive changes

PULMONARY

Decrease in Vo2 max

CARDIOVASCULAR

Dyslipidemia

Insulin resistance

DOUBLE JEOPARDY!

WHEEL OF FORTUNE

Adverse Health Outcomes:

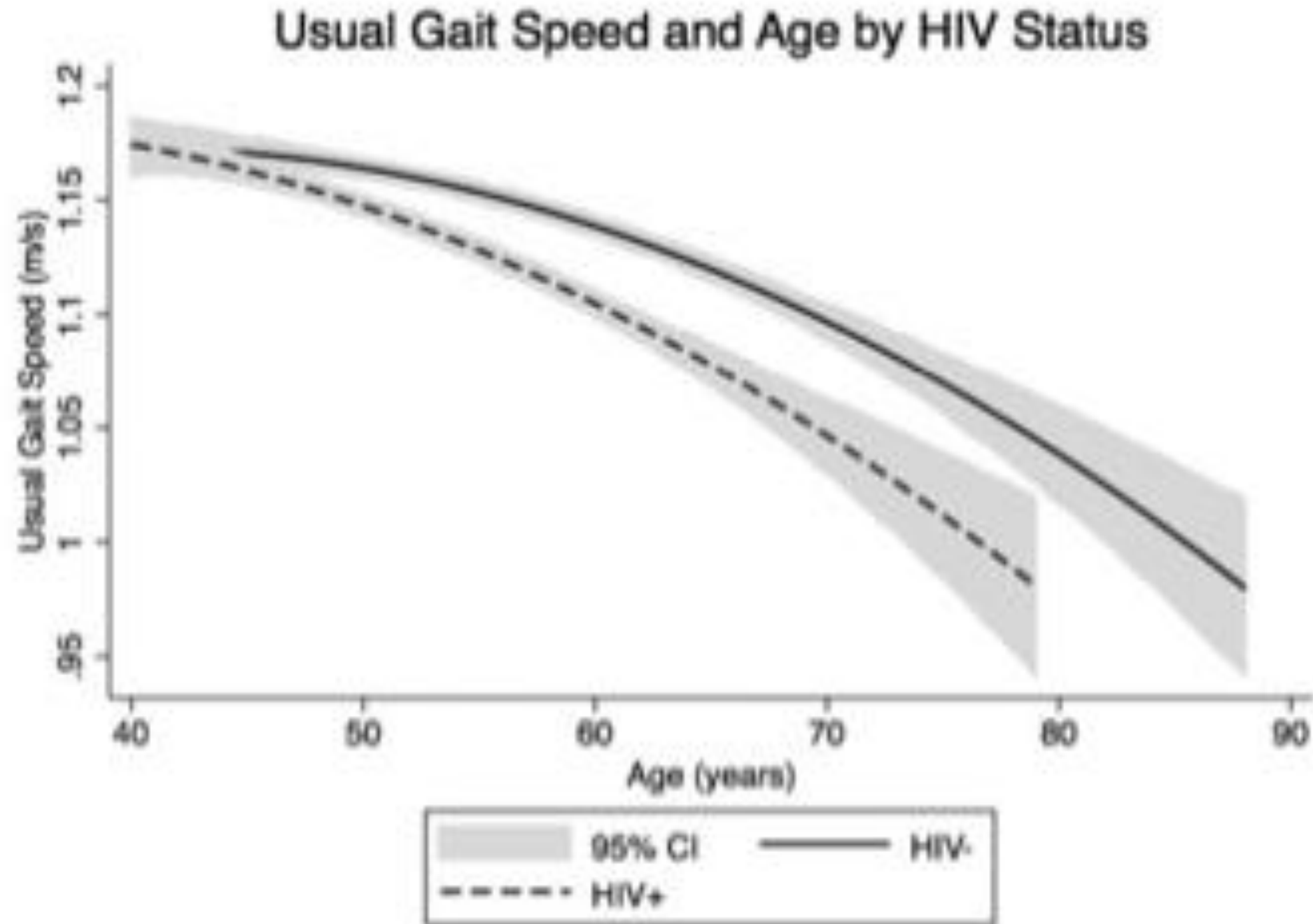
Greater risk for cardiovascular disease,
sudden cardiac death, and diabetes

Greater risk for neurocognitive disease
and dementia

Greater risk for certain cancer types
(e.g. lung, liver, and anal)

Greater risk for bone fractures





Double jeopardy contributes to functional impairments

Reduced walking speed

88% of PLWH report fatigue

Reduced grip strength

Erlandson, 2016:
536 participants in the MACS
and WIHIV Studies

24%

PARTICIPANTS WITH HIV

Falls

18%

PARTICIPANTS WITHOUT HIV

Falls associated with:
greater self-reported imbalance
hepatitis C
female sex
obesity
smoking
higher number of medications



3,442 steps per day
Goal: 10,000 steps per day



35 minutes per week of
moderate-vigorous physical
activity
Goal: 150 minutes per week



75% of awake time is
sedentary
Norm: 50-60% of awake time



393 meter 6 minute walk
distance
Norm: 572 meters

Low Levels of Physical Activity



Exercise
is Medicine®



Exercise is safe

Exercise is beneficial for physical health

Exercise is beneficial for mental health

Exercise does not appear to alter CD4 count or viral load

Regular exercise participation improves strength & aerobic capacity with more robust results in people with higher CD4 counts

Physical activity has a protective effect against frailty

Summary of the Evidence



AEROBIC

55-85% of heart rate max
30-60 minutes: >150 min/week
2-5x/week
6-24 weeks



RESISTANCE

Moderate-high intensity
10 repetitions x 2 - major muscle groups
2-3 days per week
Minimum 12 weeks



BALANCE

Challenging exercises
At least 50 hours of practice

Ibenem, 2019

Sherrington, 2008

EXERCISE PRESCRIPTION

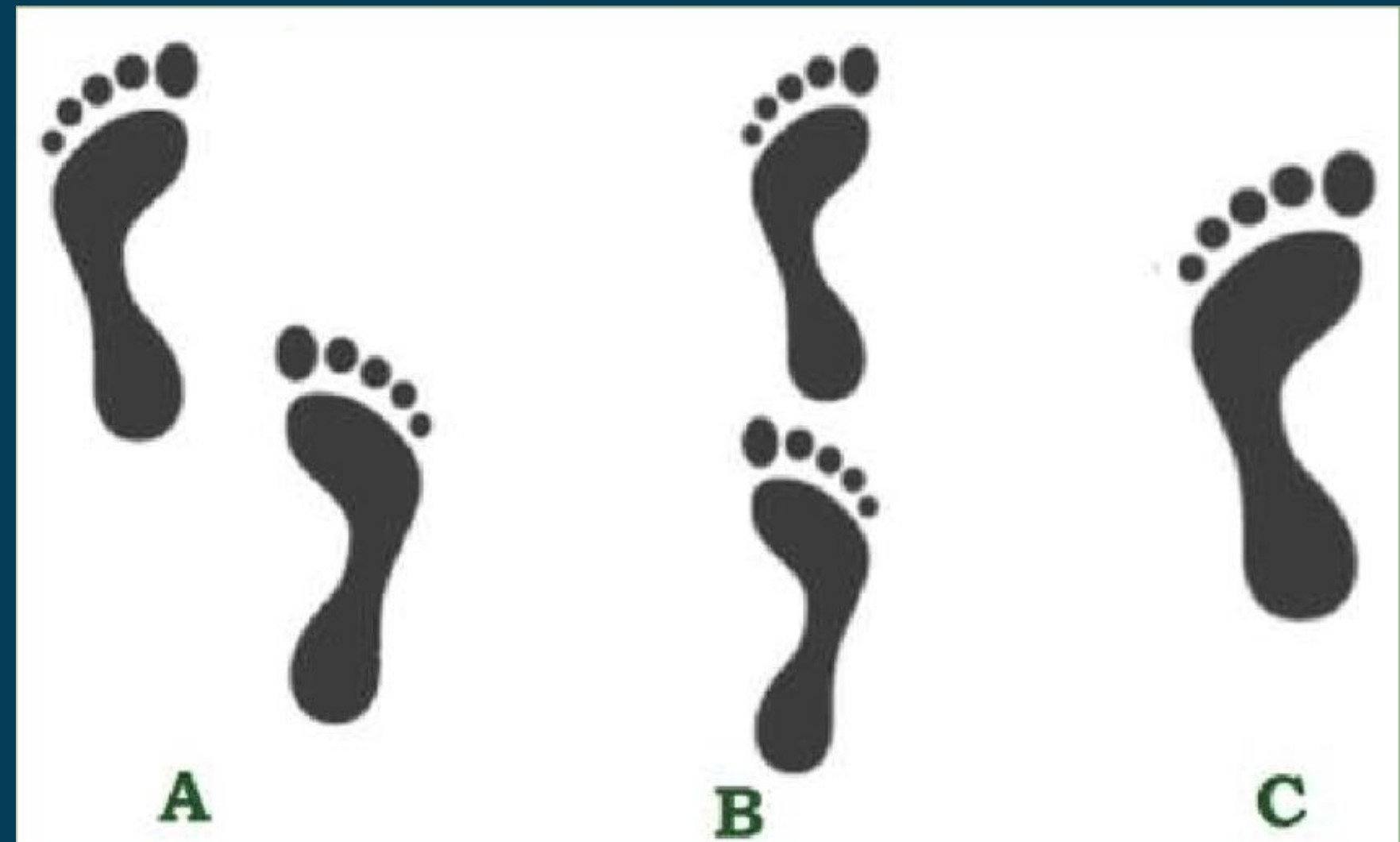
CHALLENGING

Vary base of support, eyes open & closed,
involve vestibular system

PROGRESSIVE

Increase difficulty over time

Balance Exercise



Resistance Exercise

CHALLENGING

Aim for a weight you can lift
~10 times

PROGRESSIVE

Increase weight 5-10% every 1-
2 weeks

MAJOR MUSCLE GROUPS

Prioritize muscles key for function:
gluts, quadriceps, biceps, triceps

Aerobic Exercise

Oursler, 2018:

High intensity: 3x/week 45 minutes on a treadmill

Moderate intensity: 3x/week 45 minutes self-paced walk on a track

Results:

Significant difference in Vo_2 peak in high intensity group but not moderate intensity group

6 minute walk distance improved by 62 meters in high intensity group and 54 meters in moderate intensity group

→ **INTENSITY MATTERS**

Benefits of
high intensity

Aerobic & anaerobic fitness

Blood pressure/cardiovascular health

Insulin sensitivity

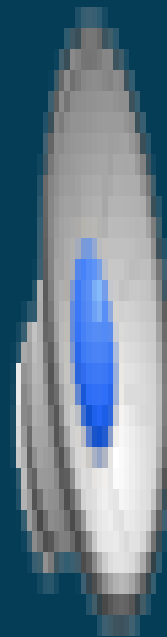
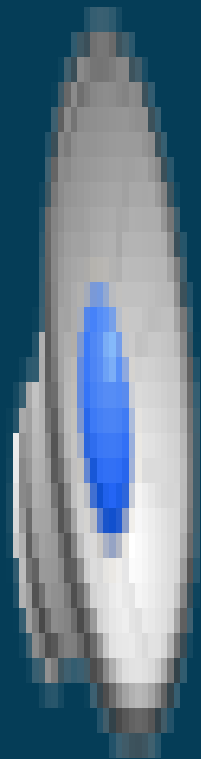
Cholesterol profiles

Abdominal fat & body weight

Improved mobility measures

Modifies Parkinson's disease severity

High intensity interval training



5 minute intervals at >70% of HR maximum for 30 minutes; 2x/week for 6 weeks



Activities include fast walking, weighted, stairs and multi directions



11 people >50 diagnosed with HIV and are pre-frail or frail

Outcome	Baseline	Follow Up	Difference	Minimally clinically important difference
SHARE-Frailty Index	2.60	0.62	1.98	
Fast walking speed (m/sec)	1.44	1.83	0.39	
Self-selected walking speed (m/sec)	1.06	1.30	0.24	0.05
Timed Up and Go (sec)	12.57	9.14	3.43	3.4
Berg Balance	53.4	55	1.6	3.0
SPPB	9	11.2	2.2	1.0
PROMIS-fatigue	23.2	15	8.2	3-5
6 minute walk test (ft)	1295	1751	456	164

Results

The slide features a dark teal background. In the top right corner, there is a light blue triangle pointing downwards. In the bottom left corner, there is a white triangle pointing upwards. A thin white vertical line is positioned on the left side of the slide, and a thin white diagonal line is in the top right corner.

To age well, the best physical activity is one you actually do

Sit less and move more and if possible, increase the intensity!

Thank you!

WEBSITE

cje.net/research

EMAIL ADDRESS

margaret.danilovich@cje.net

TWITTER

[@margaretdptphd](https://twitter.com/margaretdptphd)