

# **Punching Back at Parkinson's with Exercise**

Dr. Michael Braitsch PT, DPT - August 2019

# Disclosure Slide

- The presenter is an avid exercise enthusiast, a licensed physical therapist, and martial artist and is extremely biased in terms of promoting exercise, physical therapy, and martial arts training.
- All forms of exercise are not appropriate for all people. Topics covered should not be used as a blanket treatment method or an individual exercise prescription. Each person must rely on their own judgement and reasoning to determine the suitability of physical exercise along with consultation with medical professionals prior to initiating any new exercise activity.
- Research findings presented represent only a sample of the universe of research available on exercise and treatment concepts for Parkinson's and should not be taken as a definitive or complete representation of all available research on this topic.
- Resources provided in today's session are educational in nature and should not be your only source of information for the assessment or treatment of any condition.
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- (Financial Disclosure: The presenter is a recipient of remuneration for speaking at this conference)

# Bio Highlights

## Dr. Michael Braitsch PT, DPT

- Doctor of Physical Therapy (DPT) from UT Southwestern Medical Center
- Former amateur fighter
- Long-time martial artist and instructor
- Board member of the Adaptive Martial Arts Association
- Elected committee member of the Texas Physical Therapy Association
- Creator of specialty group programs: South Paws boxing club, tai chi balance, adaptive Kung Fu, adaptive strength training
- Funded research for the Parkinson Foundation Boxing Study in collaboration with UTSW
- Former professor of kinesiology, DCCCD









## Session Objectives

- Review common impairments with Parkinson's
- Discuss concepts from research to address impairments
- Explore impact of different kinds of exercise on
  - Symptoms
  - Stages of progression
- Discuss forms of exercise to consider when addressing these symptoms

## Common Reasons for 1:1 Physical Therapy

- 1) Annual “tune up”
- 2) Recent change in status
- 3) You’re starting to fall
- 4) Freezing episodes



- 5) Feeling weak
- 6) Boosting balance
- 7) Work on walking
- 8) Acute flare up of chronic episode
- 9) The list goes on...

# The Value of a TRIBE

Beneficial for people with or without Parkinson's

Groups create:

- **Consistency**
- **Motivation**
- **Performance**
- **Community**

Groups impact non-physical impairments:

- Camaraderie
- Support
- Sharing: ideas, success tips, struggles



***STRENGTH in NUMBERS*** means  
we all do better together!

# Cardinal Motor Symptoms of Parkinson's:



- Bradykinesia – slowing down, loss of spontaneous and voluntary movement
- Rigidity – unusual stiffness in a limb or other body part
- Resting tremor – an uncontrollable movement of a resting limb that stops when you move
- Postural instability – problems with standing/walking or impaired balance/coordination
- Other common motor symptoms – gait problems, reduced arm swing, reduced facial expression, speech/swallowing impairments



## What can that look like?





Exercise is a journey, not a destination. It must be continued for the rest of your life. We do not stop exercising because we grow old - we grow old because we stop exercising.

— *Kenneth H. Cooper* —

**AZ QUOTES**

# 6 benefits of exercise for **anyone**

1. Controls weight
2. Combats health conditions & diseases
3. Improves mood
4. Boosts energy
5. Promotes better sleep
6. Can be fun and social

# Current concepts for exercise in Parkinson's



## Dr. Nirav Pavasia

**“I generally see two categories of patients with Parkinson’s: those who exercise and those who do not. The ones who exercise, as a whole, do much better.”**

(Parkinson Voice Project Educational Speaker series – August, 2018)

How does  
exercise  
help?

*“Not only is it good for the heart, the brain and the muscles **in the same way it is for healthy people,** exercise also **modifies signs and symptoms** of Parkinson’s.”*

- Dr. Daniel Corcos

# Neuroplasticity



Process by which the brain encodes experiences and learns new behaviors

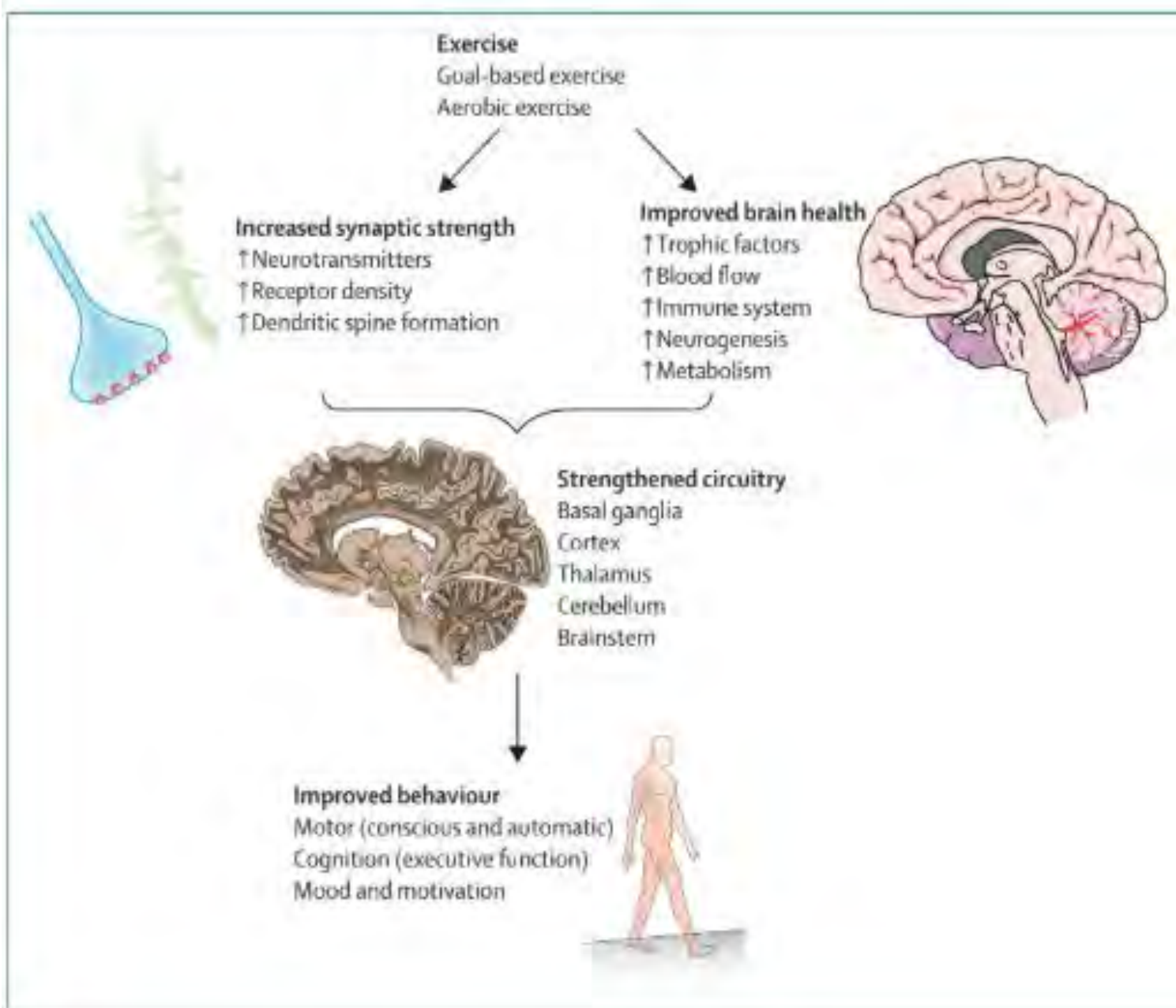


The modification of existing neural networks by addition or modification of synapses

# Concepts of Neuroplasticity

- 1) Use it or lose it
- 2) Use it and improve it
- 3) Specificity
- 4) Repetition matters
- 5) Intensity matters
- 6) Time matters
- 7) Salience matters
- 8) Age matters
- 9) Transference or generalization
- 10) Interference

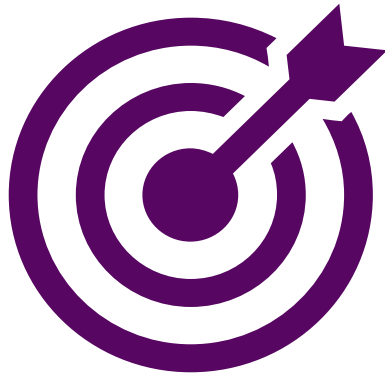




## Exercise improves:

- Expression of neurotrophic factors
  - Blood flow
  - Immune response
  - Neurogenesis
  - Metabolism (i.e. mitochondrial health)
  - Motor and cognitive performance
- (Petzinger, 2013)

# Pre-Clinical and Early Stages



## Goal: **Neuroprotection**

- Fighting to slow progression
- Use it or lose it
- Maybe use it and improve it

\*Adapted from EU Physiotherapy Evidenced-based Guidelines 2014 2nd Annual Allied MDS Allied Health Professional Summer School in Torres Vedras, Portugal Keus SHJ, Munneke M, Graziano M, et al. European Physiotherapy Guideline for Parkinson's disease 2014 – penultimate version for review. KNGF/ParkinsonNet, the Netherlands ([www.ParkinsonNet.info](http://www.ParkinsonNet.info))

# Early/Middle Stages

## Goal: **Maintain Function**



Fight to slow progression

Take advantage of principles of neuroplasticity

- Optimize brain function
- Repair what you can
- Adapt and strengthen other neural pathways

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# Later Stages



## Goal: **Adaptation**

- Maximize function
- Prevent further problems associated with sedentary lifestyle

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# Improved Motor Performance

Systematic review and meta-analysis of 18 randomized control trials show aerobic exercise showed immediate beneficial effects in improving

- Motor action
- Balance
- Gait

(Hai-Feng Shu et al., 2013)

# Intensity matters!

## Effects of high-intensity training on motor & non-motor symptoms:

- 32 weeks: 2-3x/week of high intensity resistance, cardiovascular, balance and flexibility training
- Improvements in UPDRS motors, ADL and mentation scores
- PDQ-39 questions on emotional well-being and bodily discomfort substantially improved

Morberg BM, et al. *NeuroRehabilitation*. 2014 Jan 1; 35(2): 291-298

It's not too late and NEVER too early to take action.

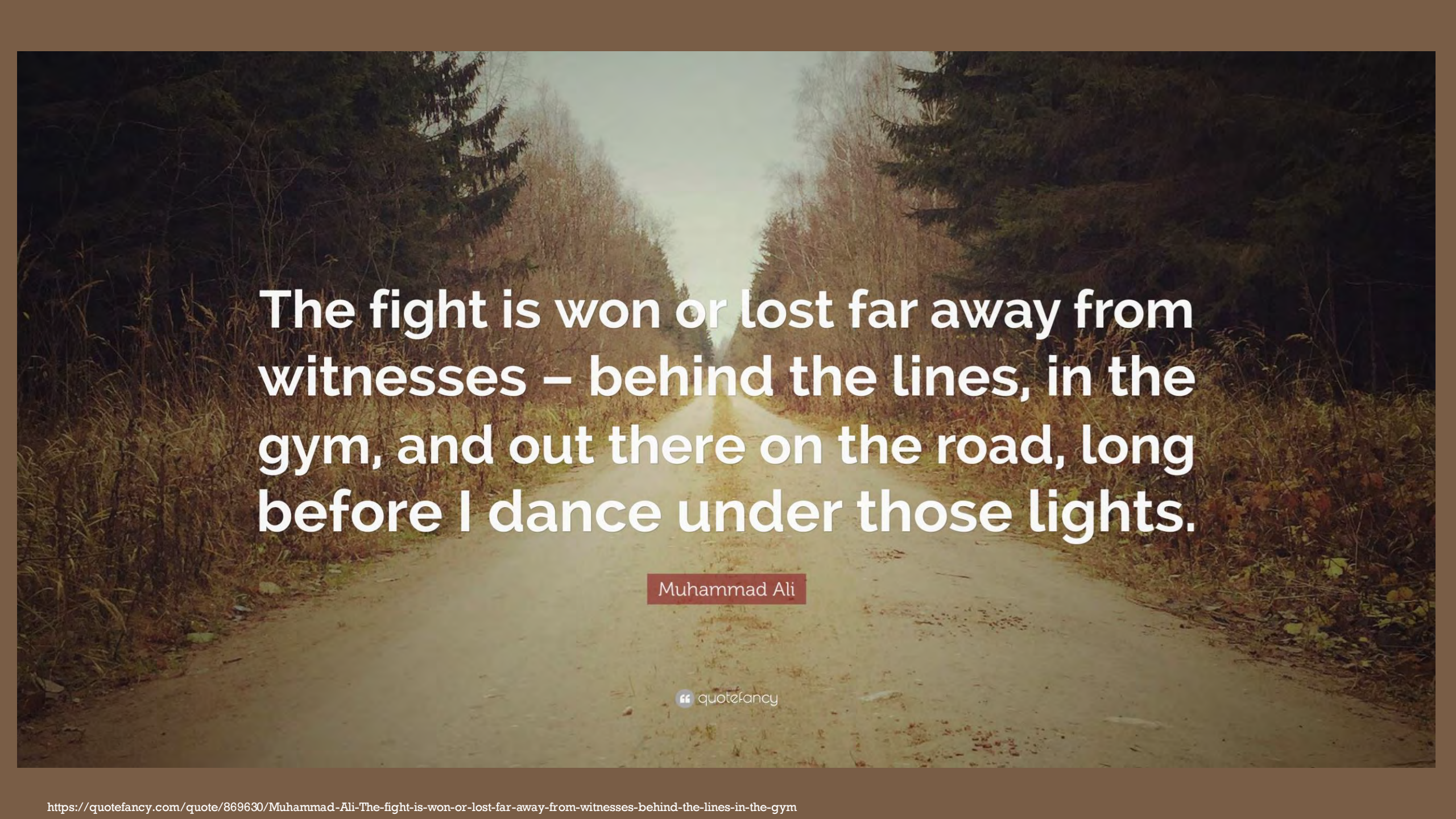
## **Positive central effects can occur with exercise**

- For people in the early stages of PD (Fisher et al., 2008)

## **Activity level is linked to severity**

- Examined physical activity on future risk of developing PD, following 143,325 people for 8 years (Thacker et al., 2008)





The fight is won or lost far away from  
witnesses – behind the lines, in the  
gym, and out there on the road, long  
before I dance under those lights.

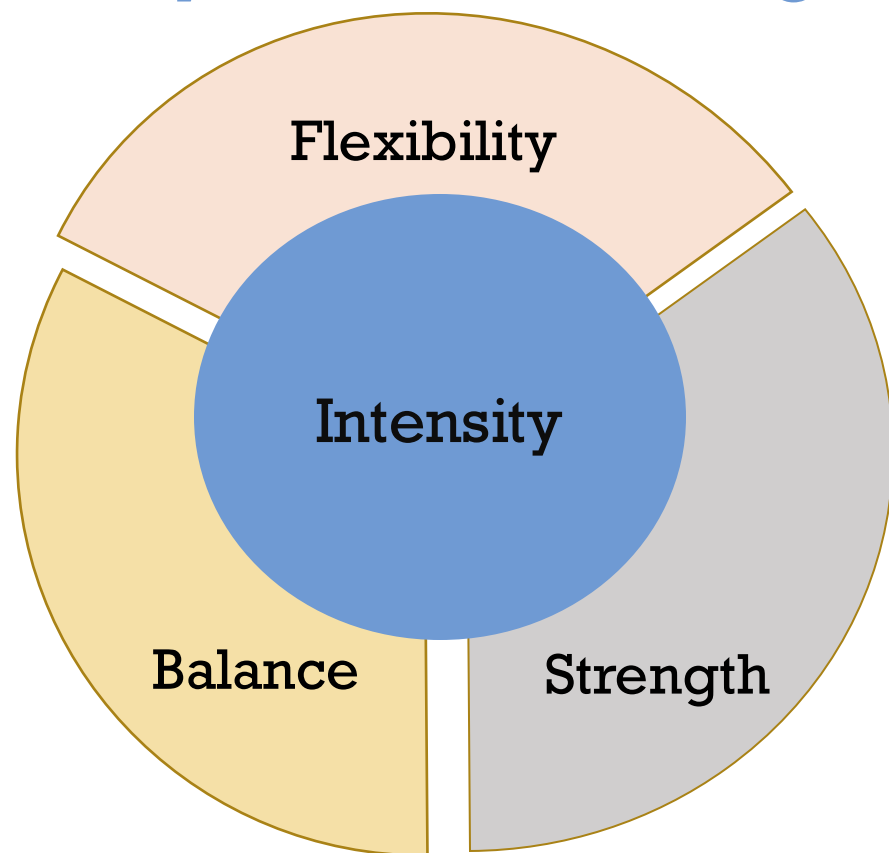
Muhammad Ali

“ quote fancy



# Key themes in exercise programming

## Everyone should target:



## Other key elements:

- Weight shifting
- Big, dynamic movements
- Multiple planes of motion
- Multiple directions
- Axial rotation

# Intensity and cardio

- Boxing
- Dancing
- Running/Walking
- Cycling
- Pole walking
- Kickboxing (maybe)

# Modified RPE

*(4-8 out of 10  
is ideal)*

10	<b>Maximum Effort</b> feels almost impossible to continue no conversation possible
9	<b>Very Hard</b> difficult to maintain exercise intensity conversation becomes difficult
7-8	<b>Vigorous</b> on the verge of becoming uncomfortable breathing heavily but still able to speak
4-6	<b>Moderate</b> feels like you can maintain activity for hours breathing heavily but can carry on a conversation
2-3	<b>Light</b> feels like you can maintain activity for hours easy to breathe and carry on a conversation
1	<b>Very Light</b> little to no activity

[http://wiki.ggc.edu/images/c/cd/RPE\\_scale.jpg](http://wiki.ggc.edu/images/c/cd/RPE_scale.jpg)

# Strength training

- Free weights
- Weight machines
- Body-weight
- Yoga
- Pilates
- Crossfit (maybe)
- PWR! Moves



Chronically weak muscle groups often include:

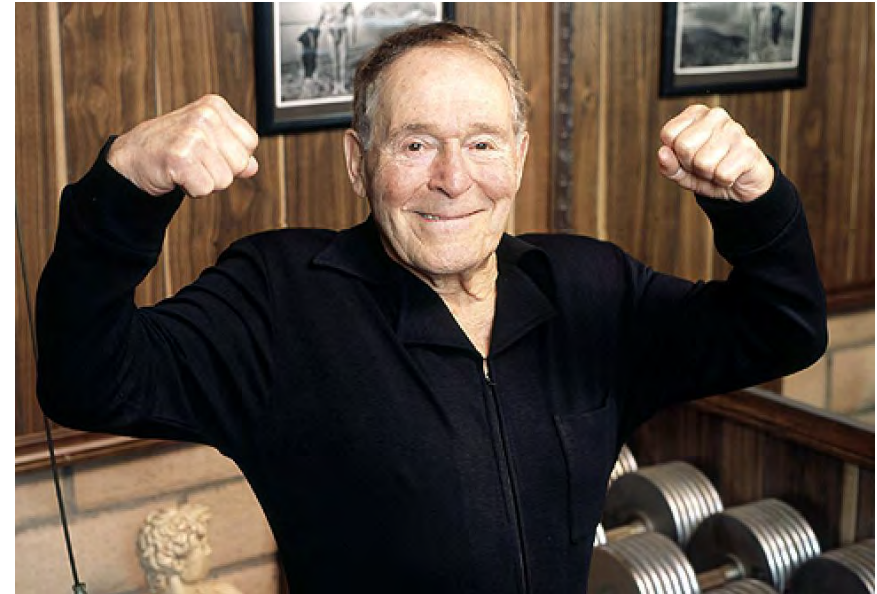
**Neck and shoulders**

- Mid-trap, low trap
- Serratus anterior
- Deep neck flexors
- Deep neck extensors

**Legs, back and hips**

- Gluteus maximus
- Gluteus medius
- Gastrocnemius and soleus

**Core**



# Improving flexibility

- Tai Chi
- Yoga
- Pilates
- PWR! Moves
- Stretching

Chronically **tight muscle groups** often include:

**Neck and shoulders**

- Upper trapezius
- Levator scapula
- Pectoralis minor

**Legs, back and hips**

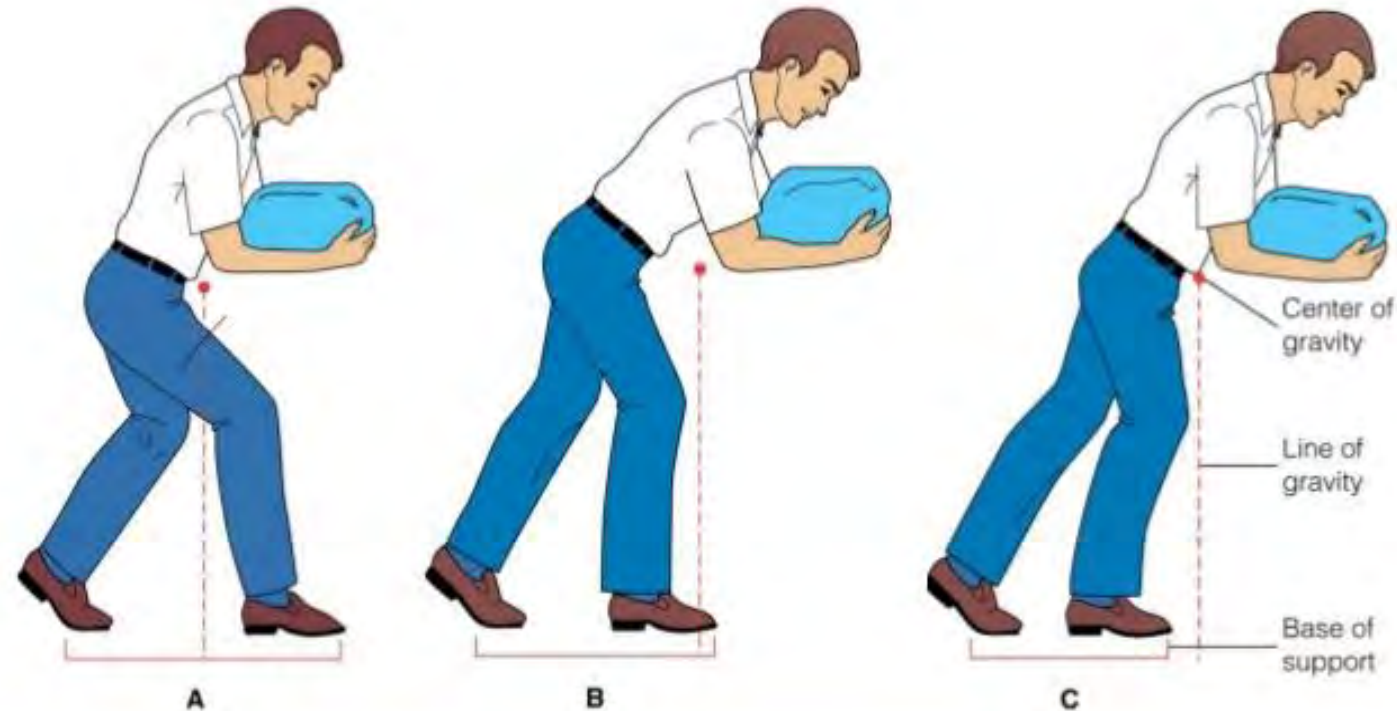
- Hip flexors
- Hamstrings
- Piriformis



# Balance and postural control

- Tai Chi
- Yoga
- Pilates
- Dancing
- Boxing
- Martial arts
- Feldenkrais
- LSVT BIG
- PWR! Moves

# Overall theme – Keep center of mass (COM) over base of support (BOS)

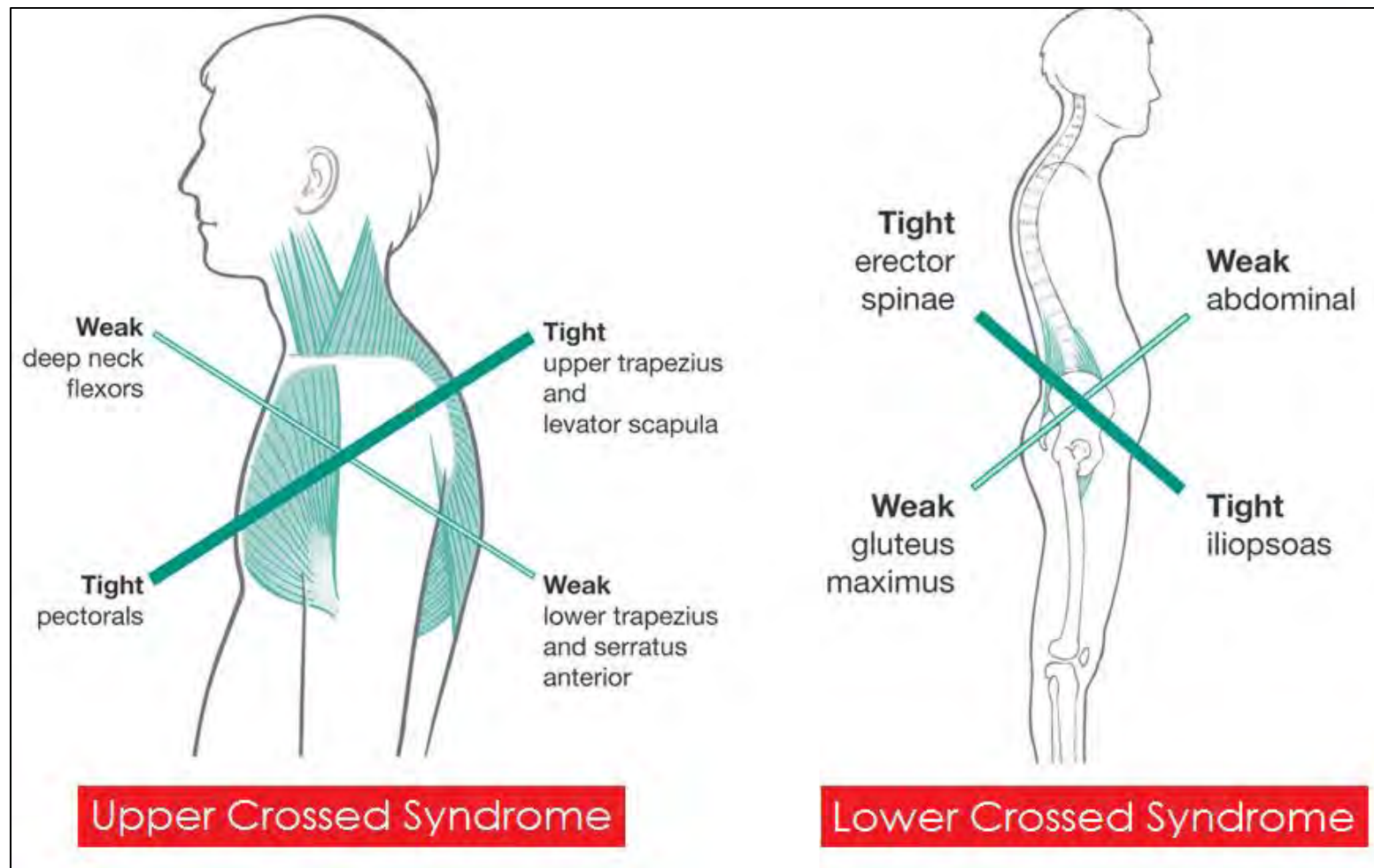


<https://image.slidesharecdn.com/bodymechanics-130211044523-phpapp01/95/body-mechanics-5-638.jpg?cb=1360557990>

Then, gradually challenge yourself and progress safely



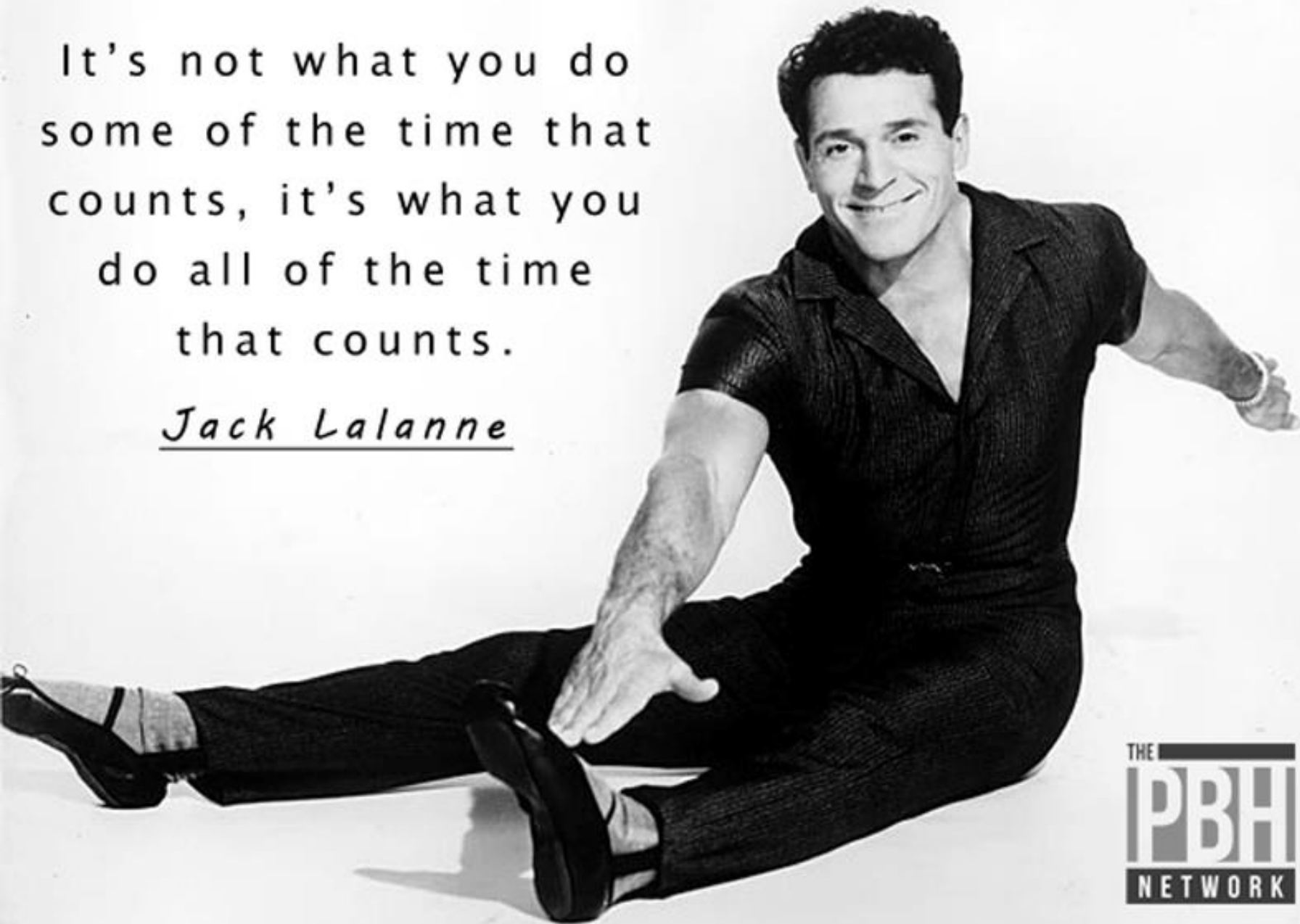
# Posture – Upper & Lower Crossed Syndromes



# Goals for people with Parkinson's at different stages

It's not what you do  
some of the time that  
counts, it's what you  
do all of the time  
that counts.

Jack Lalanne





# How to get from this...



# ...to this!





There is no such thing as a natural boxer. A natural dancer has to practice hard. A natural painter has to paint all the time. Even a natural fool has to work at it.

— *Joe Louis* —

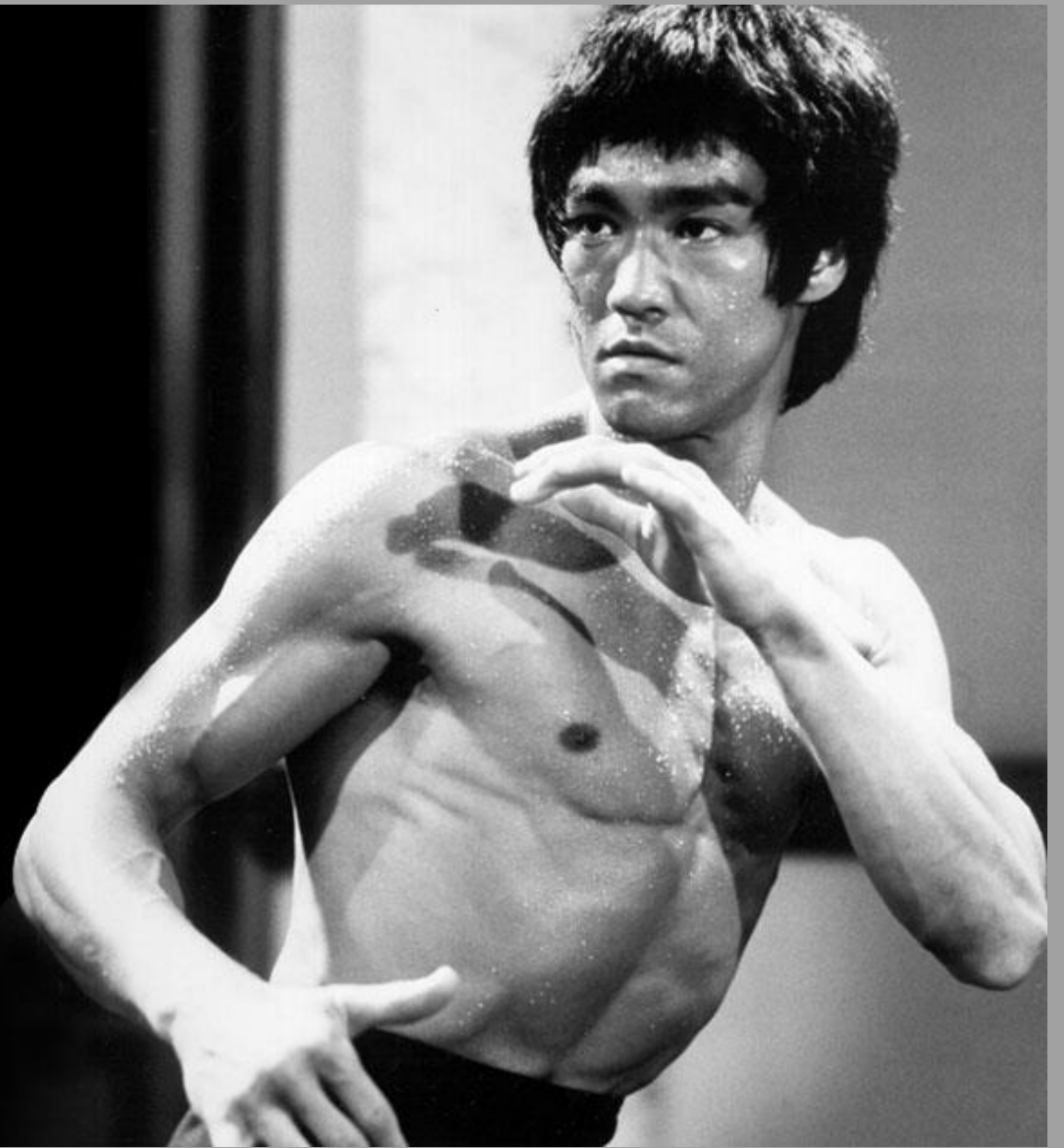
**AZ QUOTES**



Knowing is not enough,  
**we must apply.**  
Willing is not enough,  
**we must do.**

*- Bruce Lee*

Goalcast





**We love you, Philly!**



**THANK YOU!**

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# Questions and Training

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