



**Exercise Is  
Medicine**

***Why You Should  
Take It!***

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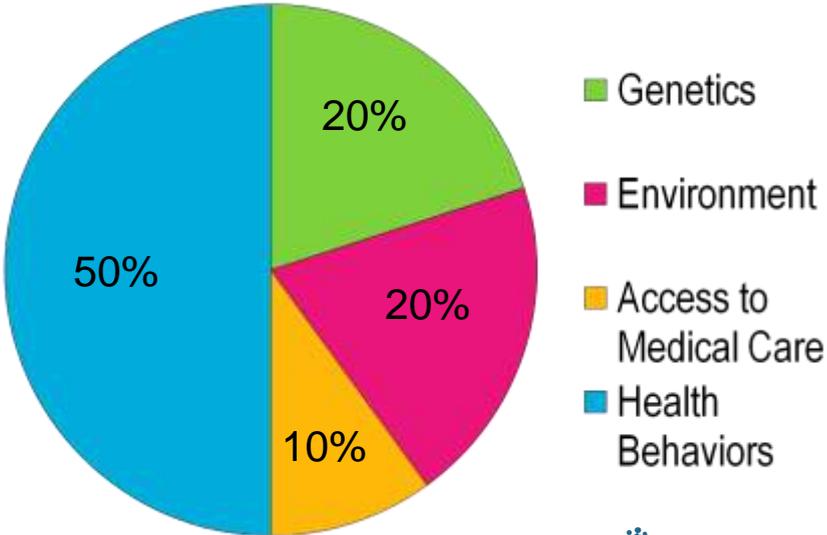
## Conflict of Interest Disclosure

### Robert Sallis

- Has no actual or potential conflict of interest in relation to this presentation
- Will be discussing the use an off-label and unapproved drug called Exercise in this presentation



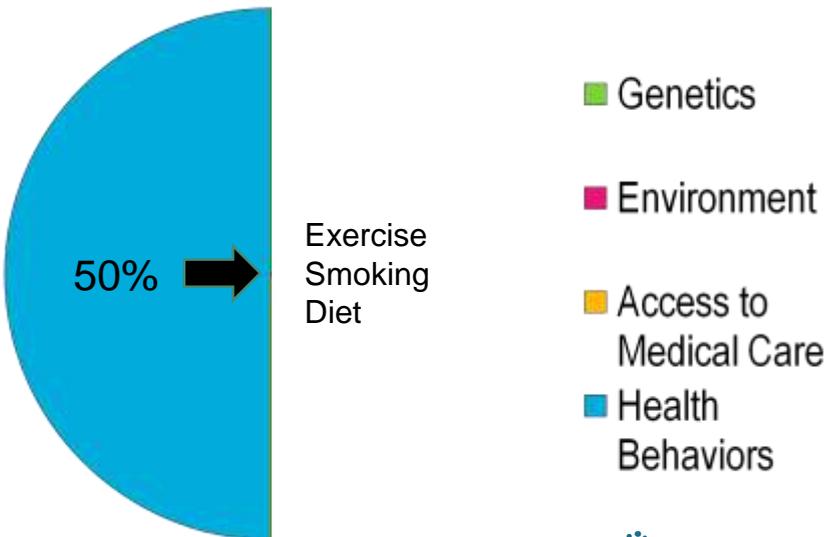
## Contributors to Overall Health Status; The Power of Health Behaviors



Source: CDC 2000

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## Contributors to Overall Health Status; The Power of Health Behaviors



Source: CDC 2000

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## Exercise and Health

- Physical inactivity has an astonishing array of harmful health effects.
- Exercise is a powerful tool for both the treatment and prevention of chronic disease and obesity, as well as premature death.
  - There is a linear relationship between physical activity and health status.
  - The association between disease and an inactive and unfit way of life persists in every subgroup of the population.
- Physical inactivity is THE major public health problem of our time.

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## THE LANCET

“In view of the prevalence, global reach and health effect of physical inactivity, the issue should be appropriately described as *Pandemic*, with far-reaching health, economic, environmental and social consequences.”

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Physical Activity

July 2012

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# THE LANCET

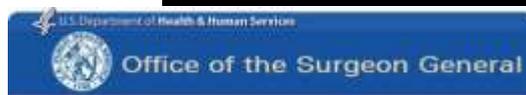
“We Urge all sectors of government and society to take immediate, bold actions to help make active living a more desired, affordable, and accessible choice for all population groups.”



July 2016

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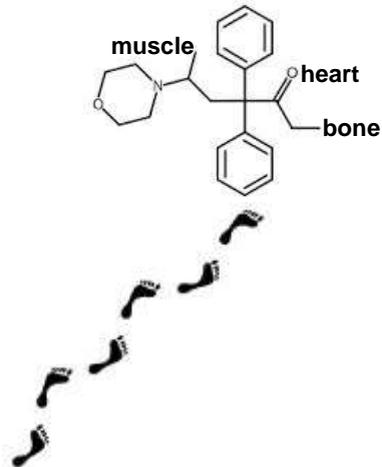
**Boris Lushniak, MD, MPH**  
Acting United States Surgeon General



**ACSM Annual Meeting**  
Orlando, Florida; May 30, 2014

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## A Drug Called Exercise



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## A Drug Called Exercise

- **Generic name:** physical activity
- **Other Brand names:** walking, jogging, hiking, rolling, swimming, aerobics, biking, tennis, basketball, soccer, dancing, gardening, etc.
- **Dosage:** optimum 150 minutes per week in adults; 60 min per day in children has proven efficacy. Even low doses have been shown to have benefit. Advise to start with low dose and advance as tolerated.
- **Pregnancy and Lactation:** completely safe. Good for mother and baby.



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## A Drug Called Exercise

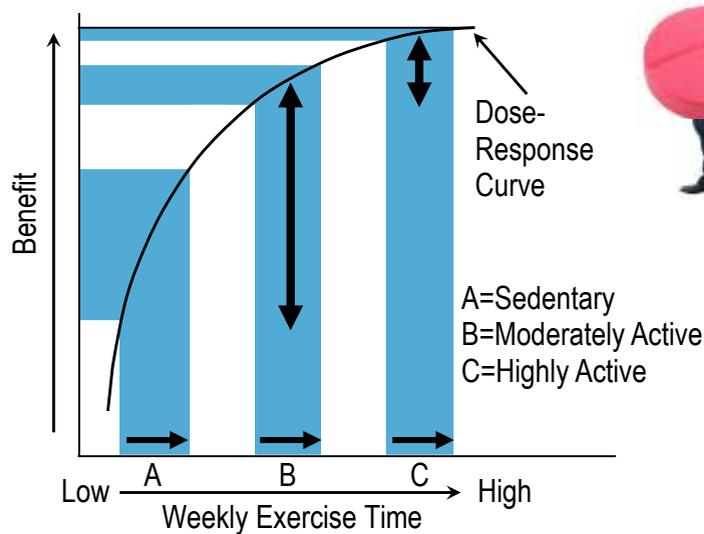
### ■ Indications and Usage:

- Prevent obesity and mitigate its risks
- Reduce development and improve management of diabetes
- Prevent and treat heart disease
- Lower risk of cancer (breast and colon)
- Treatment of hypertension
- Prevent osteoporosis and fractures
- Manage depression and anxiety
- Reduce risk of dementia
- Recreational uses
- Decrease risk of premature death



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## A Drug Called Exercise Dose-Response Curve



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## A Drug Called Exercise

- **Side effects:** decreased BP, pulse and blood sugar; stronger muscles & bones, weight loss; improved mood, confidence, self esteem and concentration; Bowel & sleep habits improved; Look & feel better.
- **Adverse Reactions:** sweating, injury (overdose), sudden death (extremely rare).
- **Administration:** self administer or with others. Start off slowly, add minutes and intensity PRN. Change formulations to decrease boredom & improve compliance. Take outdoors or indoors any time of day.



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## Exercise is a wonder Drug *Physicians should prescribe; Patients should take!*

- **Exercise is Medicine** that can prevent & treat chronic disease and those who take it **LIVE LONGER**.
- If we had a pill that conferred the proven health benefits of exercise, physicians would prescribe it to every patient and healthcare systems would find a way to make sure every patient had access to this wonder drug.



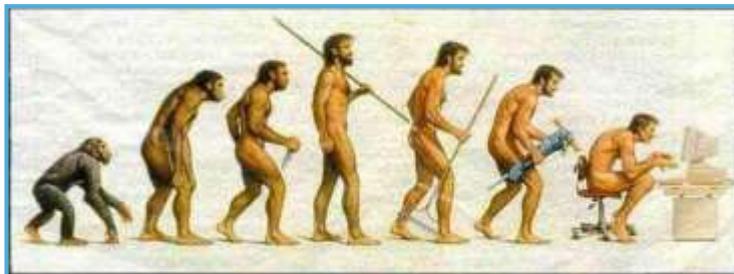
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**Unfortunately – We have systematically engineered physical activity out of our daily routine**



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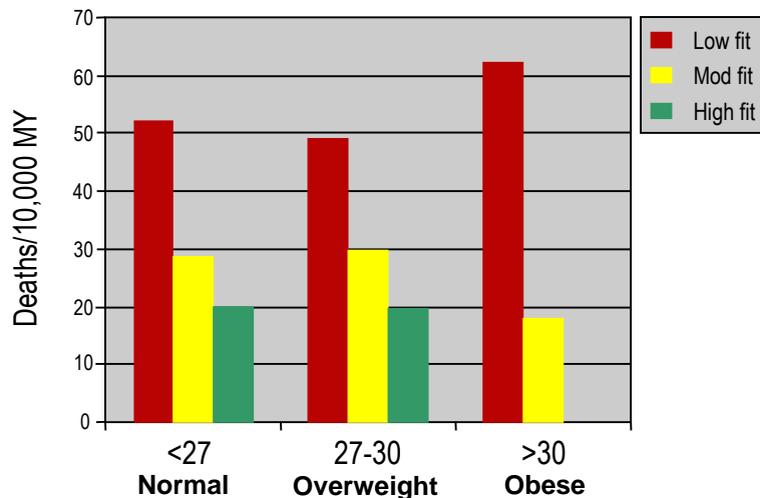
**The Sedentary Death Syndrome;  
Are We On Our Way to Extinction?**



The inactivity epidemic is more concerning than the obesity epidemic.

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## Death Rates by Fitness & BMI Categories

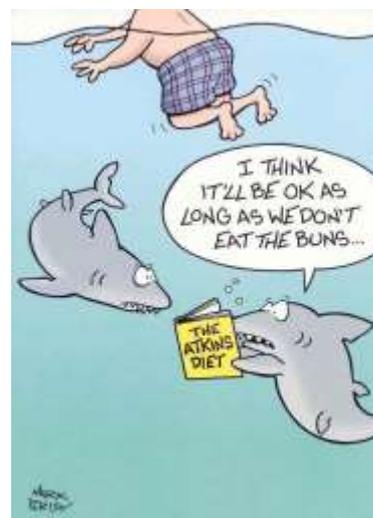


Barlow et al. *Int J Obes* 1995; 19:Suppl 4, S41-4

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## Fitness vs. Fatness

- Better to be fat and fit, than skinny and un-fit.
- Low level of fitness is a bigger risk factor for mortality, than mild to moderate obesity.
- Benefits of physical activity are the same, regardless of how much you weigh.



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## Patient's deserve to know the facts...



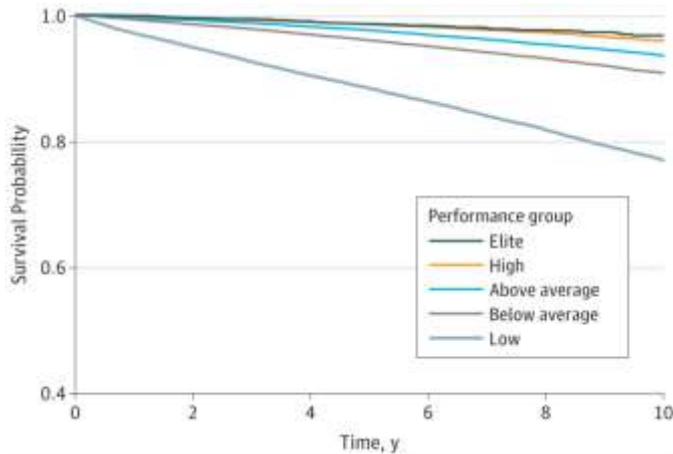
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## Irrefutable Evidence for Exercise in the Primary and Secondary Prevention of:

- Diabetes mellitus
- Cancer (breast and colon)
- Hypertension
- Depression
- Osteoporosis
- Dementia
- Coronary Artery Disease
- Lower death rate from all causes

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# Association of Fitness With Mortality in Adults Undergoing Ex Treadmill Testing



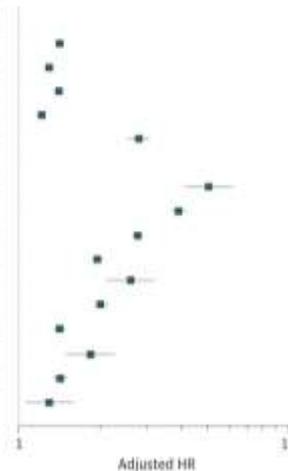
-122,007 adults with ETT at Clev Clinic  
 -1991-2014 (23 yrs)  
 -Fitness inversely a/w all-cause mortality in 5 quintiles of fitness

Mandsager, JAMA 2018



# Low Fitness Was Bigger Risk than Hypertension, Diabetes, CAD or Smoking

Variable	HR (95% CI)	P Value
<b>Comorbidity</b>		
Smoking	1.41 (1.36-1.46)	<.001
CAD	1.29 (1.24-1.35)	<.001
Diabetes	1.40 (1.34-1.46)	<.001
Hypertension	1.21 (1.16-1.25)	<.001
ESRD	2.78 (2.53-3.05)	<.001
<b>Group comparison</b>		
Low vs Elite	5.04 (4.10-6.20)	<.001
Low vs High	3.90 (3.67-4.14)	<.001
Low vs Above Average	2.75 (2.61-2.89)	<.001
Low vs Below Average	1.95 (1.86-2.04)	<.001
Below Average vs Elite	2.59 (2.10-3.19)	<.001
Below Average vs High	2.00 (1.88-2.14)	<.001
Below Average vs Above Average	1.41 (1.34-1.48)	<.001
Above Average vs Elite	1.84 (1.49-2.26)	<.001
Above Average vs High	1.42 (1.33-1.52)	<.001
High vs Elite	1.29 (1.05-1.60)	.02



Mandsager, JAMA 2018



## Why Has the Medical Community Neglected Physical Activity as a Treatment?

- Easier for physician to issue a prescription to reduce BP, cholesterol, glucose or BMI.
  - Medication adherence is very low (< 1/3 take meds as prescribed)\*.
  - Reliance on pills transfers responsibility for health to doctor resulting in lower patient physical activity.\*\*
- Widespread belief we cannot change physical activity habits. However:
  - Evidence brief counseling and pedometer programs can increase physical activity.
  - We are able to convince patients to take insulin shots, Coumadin, chemotherapy, etc – why not exercise?

\*Tamblyn, Ann Intern Med. 2014

\*\*Sugiyama, JAMA Intern Med. 2014

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## If she can convince a walrus to exercise...



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## What Can be Done?

- World wide exercise initiative:
  - Every patient. Every visit. Every treatment plan.
- Physical activity should be recorded as a vital sign; Patients advised to do 30 min of mod exercise, 5 days/wk.
- Message should be the same from every medical provider, regardless of specialty.
- We must begin to merge the healthcare industry with the fitness industry.



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## Goal:

- To make physical activity assessment and exercise prescription a standard part of the disease prevention and treatment paradigm for all patients



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## Exercise Is Medicine

- A global health initiative sponsored by the ACSM and AMA.
- National launch held November 07' in Washington, D.C; Global launch in May 08'.
- Supported by *Surgeon General*, along with President's & CA Gov Councils.



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- Over 40 Countries represented; 7 Regional Centers:

- North America
- Latin America
- Europe
- China
- Southeast Asia
- Africa
- Australia



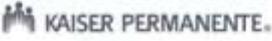
## Exercise as a Vital Sign

- Essential first step in moving EIM initiative forward.
  - Every patient needs to be asked about their exercise habits at every visit.
  - Record with traditional vital signs, BMI and smoking hx.
- EVS in use at KP So Cal since October 2009; All regions since 2012.
  - 35 Medical Centers; ~11 million patients.
  - Medical assistant ask and record EVS at every patient visit, regardless of specialty.



The screenshot shows the Epic EMR interface for patient Johnny Smith. The patient's name is at the top left. The main window displays patient demographics: 12 yrs M, Robert David (M), and allergies: Sulfis Class, Acetaminophen, 5 alpha Reductase. A recent visit on 4/22/2009 with TEST DUMMY MD is shown. The 'Exercise Vitals' form is open, with the date set to 4/30/2009 and time 11:49. The 'Exercise Level of Effort' section includes a grid for days per week of moderate to strenuous exercise (like brisk walk) and a dropdown for average minutes per day of exercise at this level. Below the form, there is a 'Review Exercise Vitals' section with a 'Mark as Reviewed' checkbox and a list of current prescriptions for Atenolol 100 mg oral tabs.

## Write a walking Rx for patients!

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Name: John W. Smith Age: 30

Walking Rx Date: \_\_\_\_\_

Recommended activity level: Moderate

Minutes per day: 30 minutes

Number of days per week: 5 or more

Intensity: Hard enough that you can't sing,  
but not so hard you can't talk during exercise.

Stop: if you experience chest pain,  
excessive shortness of breath or feel ill.

Signature: *Robert Sallis, MD*

 Every Body  
**WALK!**  
www.everybodywalk.org

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## How fast do you need to walk; To stay ahead of the Grim Reaper?



- Several studies have shown correlation between walking speed and survival.
- 1705 Australia men, age  $\geq 70$ ; Measured walking speed at usual pace for 6 m (~20 feet); Speed correlated with mortality rates over 5 yrs.:
  - Walking speed of 0.82 m/s (2 mph or 3 kph) was most predictive of mortality (i.e. speed of Grim Reaper)
  - No men walking at speeds  $\geq 1.36$  m/s (3 mph or 5 kph) were caught by Grim Reaper
- Walking faster protects against mortality!

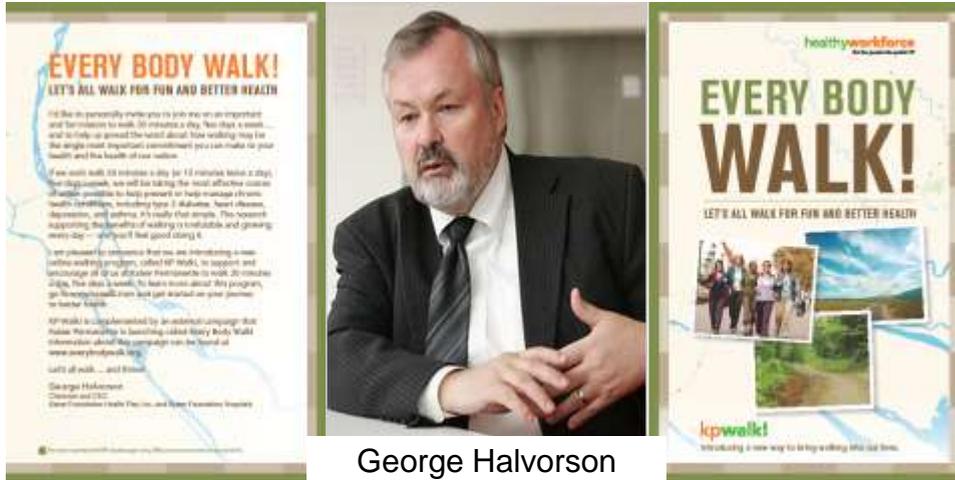
Stanaway, et al; BMJ, 2011

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# Every Body WALK!

The Campaign to Get America Walking

[www.everybodywalk.org](http://www.everybodywalk.org)



George Halvorson  
Former Chairman and CEO  
Kaiser Health Plan and Hospitals



## Vivek Murthy, MD, MBA Surgeon General's Call to Action on Walking



Washington DC  
September 9, 2015



“At Kaiser Permanente, we want you to Live Well, Be Well and THRIVE!”

  
**thrive**



Kaiser Permanente – “Cause”



## Clinicians need help! How do we integrate fitness into healthcare?

- I need something beyond telling my patient to go walk!
- Components of fitness
  - CV fitness
  - Strength
  - Flexibility
- Need to be able to refer
  - Health Club and Fitness professional
  - EIM Solution



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## A Challenge to the Fitness Industry

- Role of the fitness professional;  
Merging fitness with healthcare
  - Change focus from clients to patients.
  - Change focus from abs and buns to hearts and lungs.
  - **How do we engage you?!**
- Role of Health Clubs;  
Place your emphasis on health
  - Reach out to new demographic.
  - Target the population that really needs your services.
  - **Why aren't more clubs interested?!**



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## The Claremont Club

- Founded in 1973
  - Primarily as tennis club.
  - Small fitness component.
- *Mike Alpert* joined the club in August of 1997.
- Vision to Transform the Club
  - Actively promote health & wellness.
  - Helping people struggling with injury and illness.



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## Created Programs for Patients

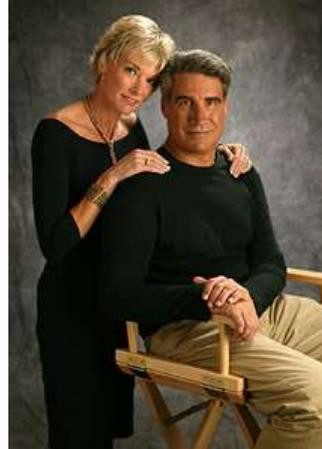
- Breast cancer
- Parkinson's and MS
- Stroke
- Cerebral Palsy
- Prostate and other cancers
- Pediatric Cancer
- Diabetes
- Spinal Cord Injury (Project Walk)



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## The Augie Nieto Story

- Icon in the fitness world.
- Founder and former owner of Life Fitness.
- Former owner of Hammer Strength.
- Sold companies in 1999 to Brunswick Corp for \$325 Million.



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## Augie Diagnosed with ALS 2005

- Started with weakness in legs and stumbling.
- Rapidly progressed despite all medical treatments.
- Saw countless specialists.
- No good treatment and little hope.
- Depression and suicide attempt.



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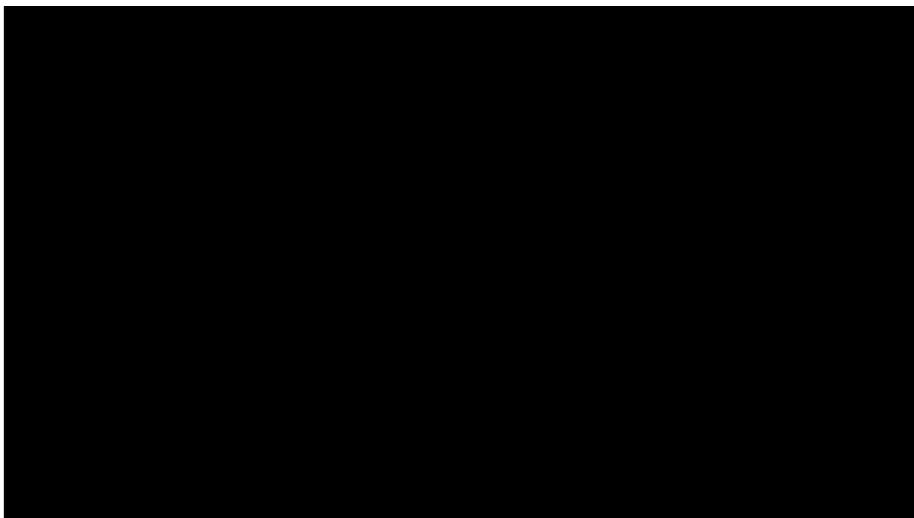
## Can Exercise Help ALS?

- Heard about Project Walk at The Claremont Club.
- No good studies to prove it.
- There were concerns:
  - Respirator & feeding tube.
  - Might injure Augie.
  - Communication issue.
- Give it a try.



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## Augie back in the gym at The Claremont Club



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## The results have been amazing...

- Dramatic improvements in strength and endurance.
- Able to whisper to his wife for the first time in 8 years.
- Depression has lifted – feels hopeful again.
- Was able to walk his daughter down the aisle at her wedding using a standing frame.



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## Augie out for a bike ride...



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## Cycling with Parkinson's Disease (Snidjers, NEJM 2010)

### Video 1

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### Dr. Jay Alberts

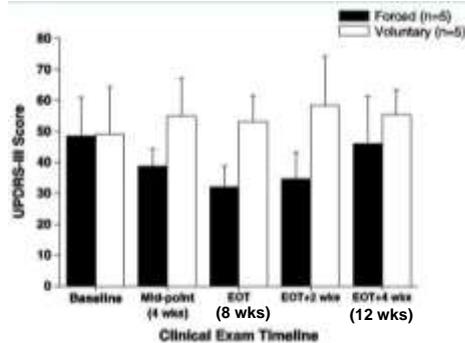
- Cleveland Clinic scientist who studies Parkinson's Disease.
- In 2003 rode a tandem bike across Iowa with friend who has PD.
- Saw dramatic improvements in his symptoms with less tremor and improved writing.
- Led to studies using cycling to treat PD.



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## High Cadence Cycling improves Parkinson's Disease Symptoms

- 10 mild to moderate PD pts did 8 wks (three 1-hr sessions at Forced (~85 rpm) or Voluntary (~60 rpm) intensity.
- Used blinded Unified Parkinson's Disease Rating Scale III (UPDRS III).
- Forced group **improved 35% from baseline**; No change seen in Voluntary Group.



*Theracycle*

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Alberts, Exerc Sport Sci Rev. 2011

## Spin Class for Parkinson's Patients at the Claremont Club



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## Spinning for Parkinson's Disease

- Enrolled 13 patients with Parkinson's disease in a 12 week long spin class.
  - 9 Men and 4 Women.
  - Age ranged from 47-89 yr.; Mean age 69.8 yr.
- Met 3 days per week (Mon-Wed-Fri) at 11 AM at the Claremont Club spin studio with an instructor.
- Each session lasted 45 min and subjects were encouraged to spin at a pace of 85-90 RPM.



## Spinning for Parkinson's Disease

- All patients had mild to moderate PD and all but one were on Levodopa.
- 11 of 13 subjects completed the full 12 week spinning trial.
- Subjects were assessed using the Unified Parkinson's Disease Rating Scale (UPDRS) at the start of the trial, at 6 weeks and again at 12 weeks.
- All assessments were done by the same physician (sports medicine fellow).

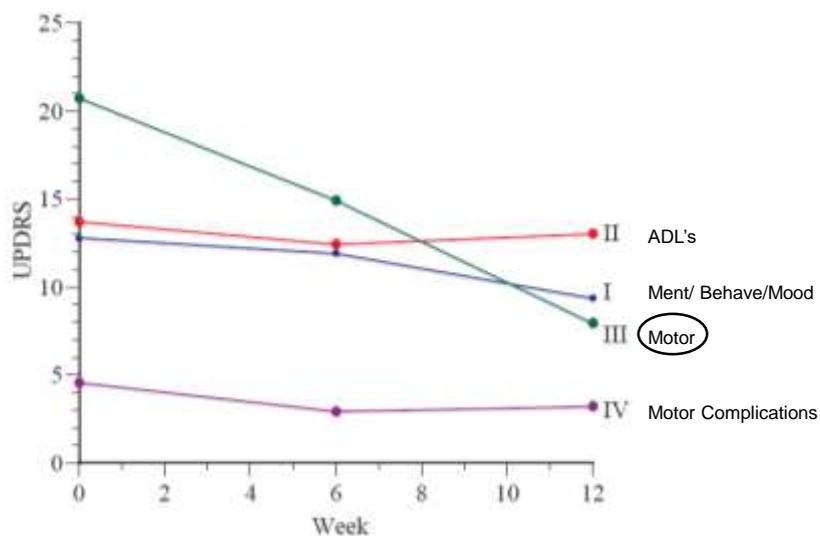


## Unified Parkinson's Disease Rating Scale

- Validated rating tool used to gauge the course of Parkinson's disease in patients to evaluate progression of disease, treatment and for research.
- Consists of 4 segments evaluated by medical pro:
  - 1. Mentation, Behavior and Mood.
  - 2. Activities of Daily Living.
  - 3. Motor Examination.
  - 4. Motor Complications
- Max score is 199 (worst disability) and lowest score is 0 (no disability)

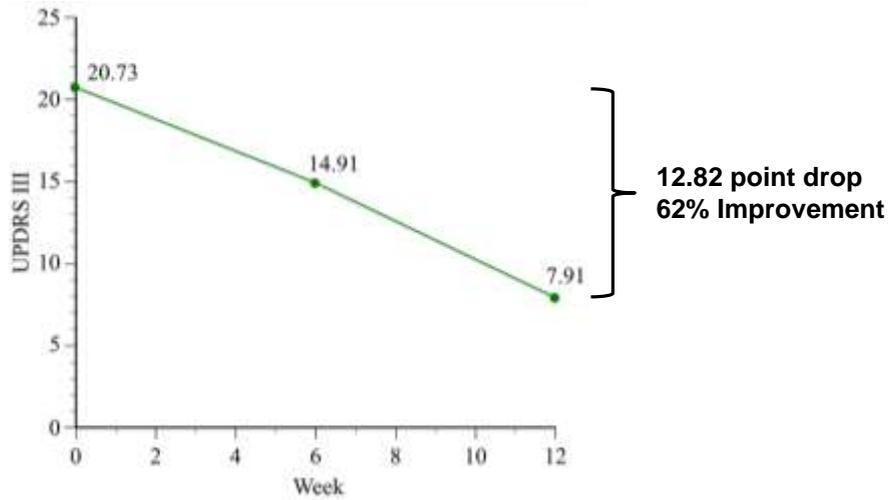
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## UPDRS I-IV Results



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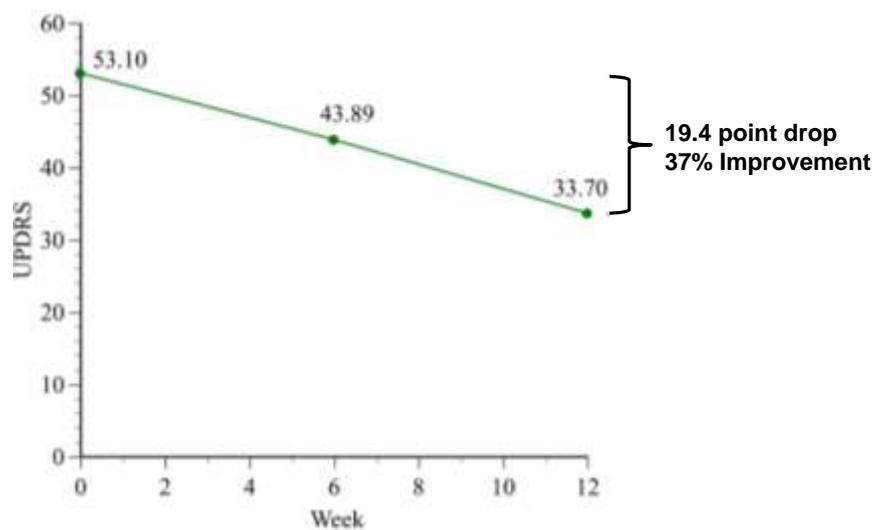
## UPDRS III (Motor) Results



$p = .0013$

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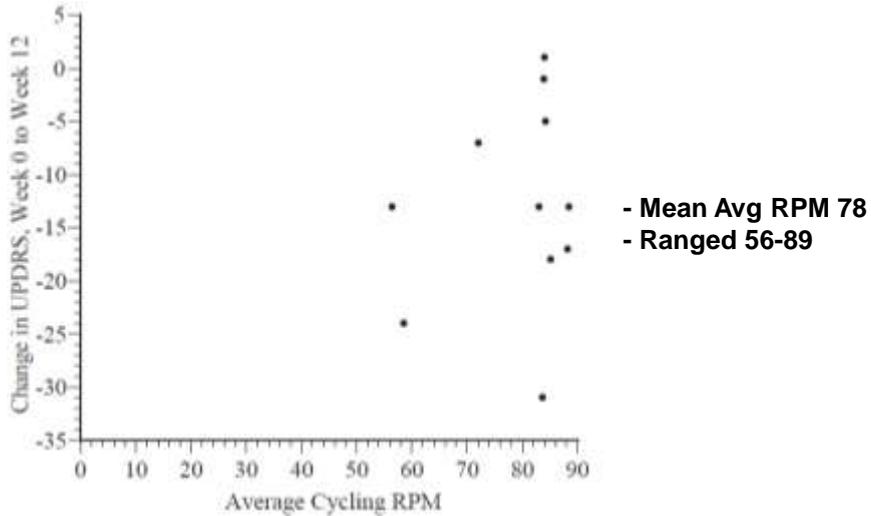
## Total UPDRS Results



$p = .00002$

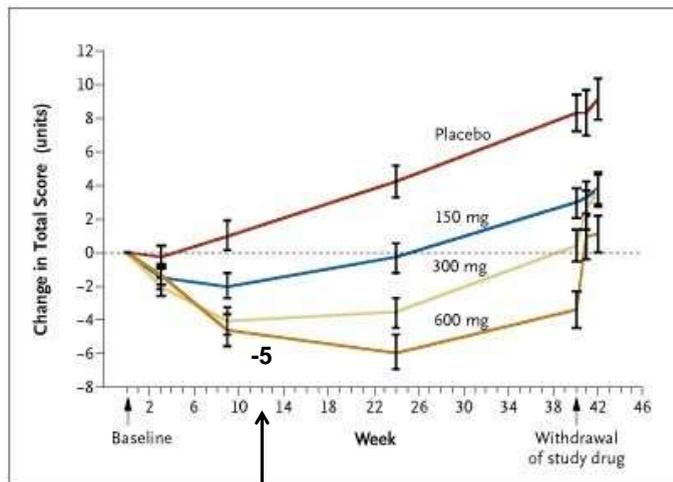
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## Average Spin RPM and Change in UPDRS from Week 0-12; No Significant Relationship



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## Change in UPDRS Scores with Varying Doses of Levodopa



Parkinson's Study Group, NEJM, 2004

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## Study Conclusions

- Results limited by small sample size.
- ALL the UPDRS average scores improved in this study, but some did not reach statistical significance at 5% level.
- Over the 12 week period, the average subject's score improved in 39 of the 50 categories of the UPDRS. (p = .000100)
- The average diastolic BP decreased by 11.09 mmhg.
- All 11 subjects wish to continue these workouts.

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## Benefits went well beyond improved PD symptoms!



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## Summary

- Evidence is overwhelming on the cost and health burden of physical inactivity.
- Benefits of exercise in prevention and treatment of chronic disease are irrefutable.
  - Healthcare providers have an obligation to inform patients of the risks of being sedentary and prescribe exercise.
  - Fitness Professionals and Health Clubs need to step up and play a role in improving health.
- **Exercise is Medicine** that all patients need to take!  
What can you do to help make that happen?



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## It's time for a change...



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