Arizona Nevada California Hawai'i Pacific Islands

WESTERN REGION Public Health Training Center

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SOUTHWEST TELEHEALTH RESOURCE · CENTER™ TRC

Weight Loss and Weight Management: Current Theories and Best Practices

Presented by the

Western Region Public Health Training Center &
the Southwest Telehealth Resource Center

Welcome

WRPHTC region – Arizona, California, Hawai'i, Nevada, and the US Affiliated Pacific Island

SWTRC region – Arizona, Colorado, New Mexico, Nevada, and Utah

Fellow HRSA grantees

All other participants from the US & abroad

Continuing Nursing Education Information

Series Purpose

The purpose of the Weight Loss and Weight Management: Current Theories & Best Practices series is explore and describe the components of a successful weight loss and management program for children and adults in family and community practice settings.

Continuing Nursing Education Information

Learning Objectives

Upon completion of this presentation, the participants will be able to:

1. Identify the 3 levels of Physical Activity Guidelines that affect patients with obesity
2. Define NEAT and describe the difference and impact of moving from sedentary to light activity
3. List the Exercise Rx Top Ten

Continuing Nursing Education Information

Nursing Evaluations & Disclosures

Criteria for successful completion:

- Attendance requirements
  - You must be present and logged into the webinar by 12:10 PM (Arizona time)
- Complete an online **NURSING** evaluation
  - Available online at: cne.nursing.arizona.edu/evaluations
- Deborah Horn has declared a financial relationship with Novo Nordisk, Takeda, Eisai. All other planners and presenters have no relevant financial relationships to declare.

Webinar Series

Weight Loss and Weight Management: Current Theories & Best Practices

This four session, interactive webinar series brings together national leaders in nutrition, exercise and bariatric medicine who will address what is needed to have a successful weight loss and management program for children and adults in family and community practice settings. The series will start with a presentation and discussion on dynamic energy balance, an important new perspective on what metabolic changes occur during weight loss and how these changes have to be taken into account as part of a weight loss program. The second session will focus specifically on exercise and energy expenditure and weight loss. The final two sessions will present pediatric and adult case studies to highlight the promoters and challenges that lead to successful patient care, in regards to weight loss and maintaining weight loss.

Webinar Tips & Notes

- Mute your phone &/or computer microphone
- Time is reserved at the end for Q&A
- Please fill out the post-webinar survey
- Webinar is being recorded
- Recordings will be posted on the SWTRC website (http://www.southwesttrc.org) and the WRPHTC YouTube channel (https://www.youtube.com/user/azphtc)

“Rethinking Energy Balance: Applying Science to Practice”

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UT Health Science Center Houston, Texas

President-Elect and Fellow - American Society of Bariatric Physicians

Diplomate - American Board of Obesity Medicine

Board Certifications: Preventive Medicine and Family Medicine

Dual Master's Degrees

Exercise Physiology
Public Health and Physical Activity

UTHealth | Medical School
The University of Texas
Health Science Center at Houston

“Results Typical”

Weight Maintenance
&
Metabolic Health

Road Map

- “Results Typical”:
  - The Guidelines for Physical Activity
  - Setting your patient up for success!

- Physical Activity + Overweight/Obesity 101
  - Quick tools to improve your approach to PA
  - Mets and Obesity
  - Anti-Sedentary Strategies
  - Equipment and PA Tracking
  - Winning with Muscle & Metabolism

5 Most Common Recommendations for PA

A. Wait until you are at your goal weight. Right now just focus on your diet

B. Walk 30 minutes per day 5 days per week

C. Take the stairs and Park your car farther away

D. Join a Gym

E. No Pain, No Gain

What's your PA Rx for a patient with obesity?

How Much Physical Activity is Enough?

General Health Benefit

- Moderate aerobic exercise 150min/wk (About 30 minutes 5x/wk) + Strength Training

Prevent Weight Gain &
Active Weight Loss

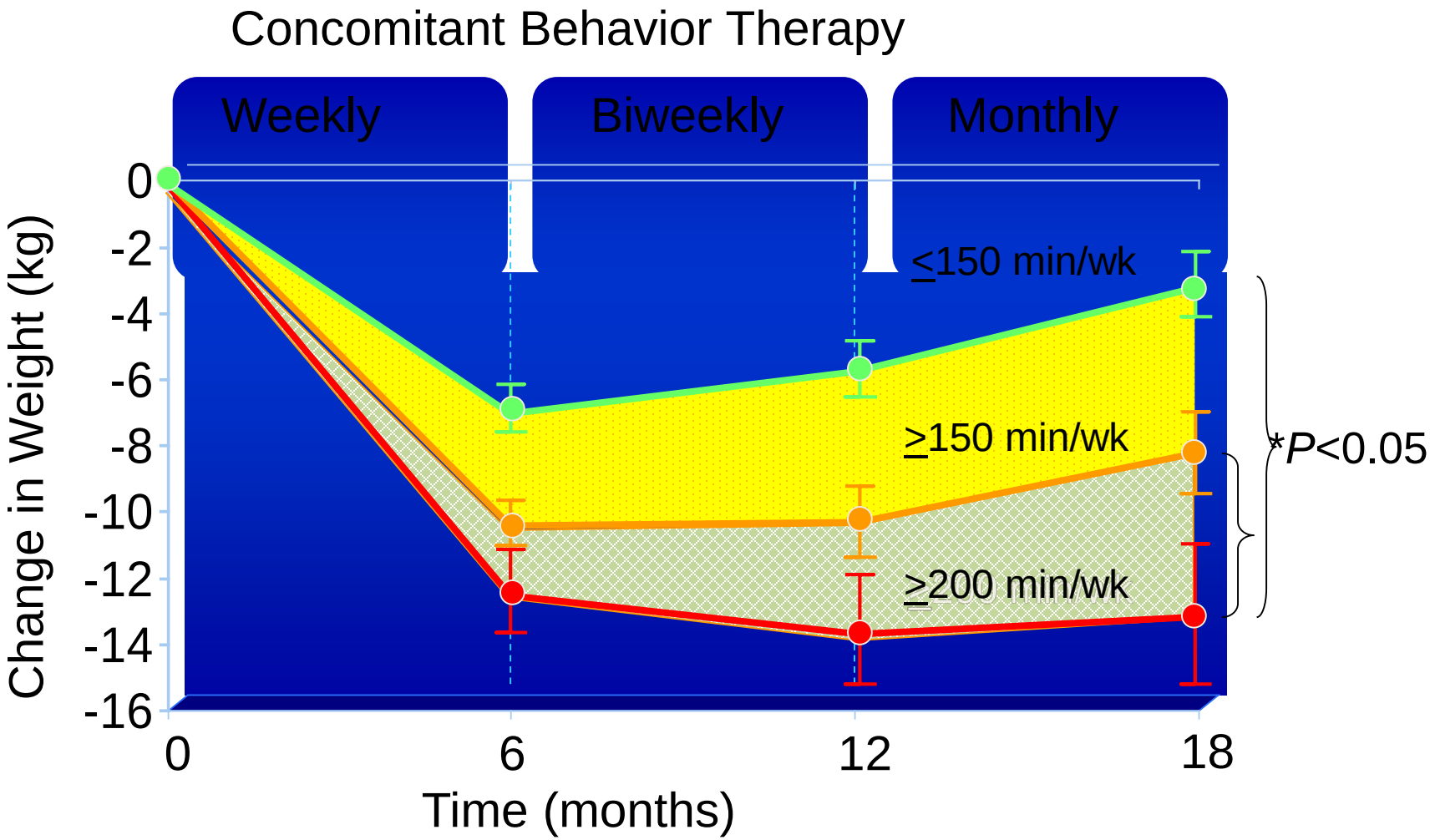
- 150-250 minutes per week
- 150-300 minutes per week

Prevention of Wt Regain

- 200-300 minutes per week
- 300-420 minutes per week

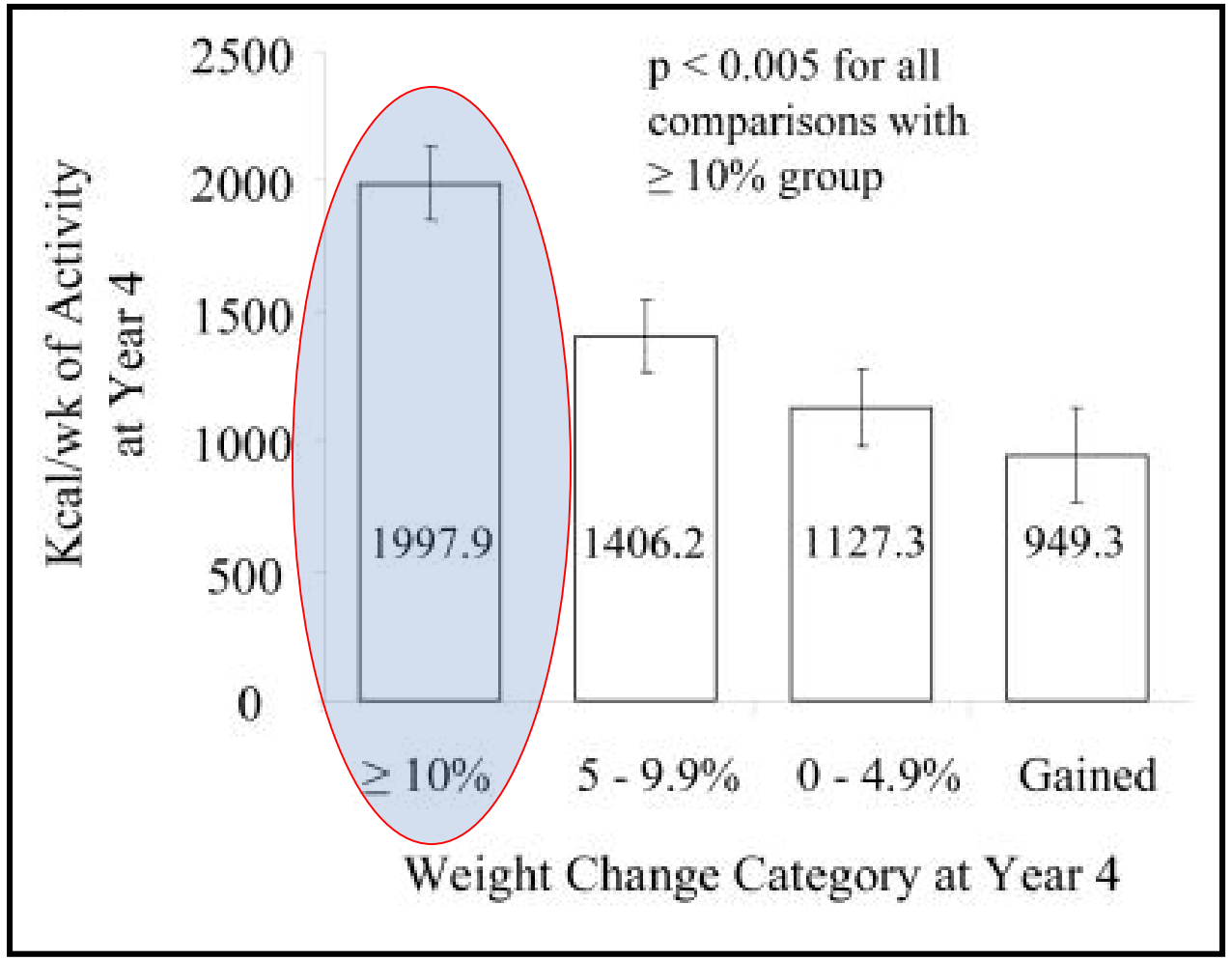
Donnelly J. Am College Sports Med. 2009.
US Health and Human Services. 2008.

Success & Physical Activity



Jakicic JM. *JAMA*. 1999.

Look AHEAD Year 4: Success & PA



4-5 Mets for 60-70min/d Or Approx 420min/wk

Wadden TA. *Obesity*. 2011.

OBES SURG (2012) 22:335–341
DOI 10.1007/s11695-011-0544-5

REVIEW

Does Exercise Improve Weight Loss after Bariatric Surgery? A Systematic Review

Kristine Egberts · Wendy A. Brown · Leah Brennan · Paul E. O'Brien

- 17 Observational Studies
- 3.62 kg greater mean wt loss
- 2.3x greater odds of unsuccessful wt loss if ↓ PA after surgery
- PA repeatedly an independent predictor of weight loss

Next Steps

- FFM preservation
  - (RYGB 31%, BPD 26%, Band 18% loss of FFM)
- Self reported questionnaires
- RCTs needed
- Optimal Rx unknown*
- **Excellent Review:** King and Bond. Exerc Sport Sci Rev., Vol 41(1) 2013

Physical Activity Recs & Bariatric Surgery

Pre-op

ASMBS: Mild exercise
20min/d, 3-4d/wk

AHA: Low-Moderate intensity

PA at least 20 min/d, 3-4d/wk

ASMBS/ACSM expert panel assembled to develop specific pre/post operative recommendations.

Post-op

ASBMS/TOS/AACE:

At least 30 min/d

IOM, HHS, ACSM, IASO: All agree that 150min/week is insufficient for the prevention of weight regain.

250-420min/wk

60-90min/day

http://s3.amazonaws.com/publicASMBS/GuidleliStatesments/guildelines/asbs_bspc.pdfnes

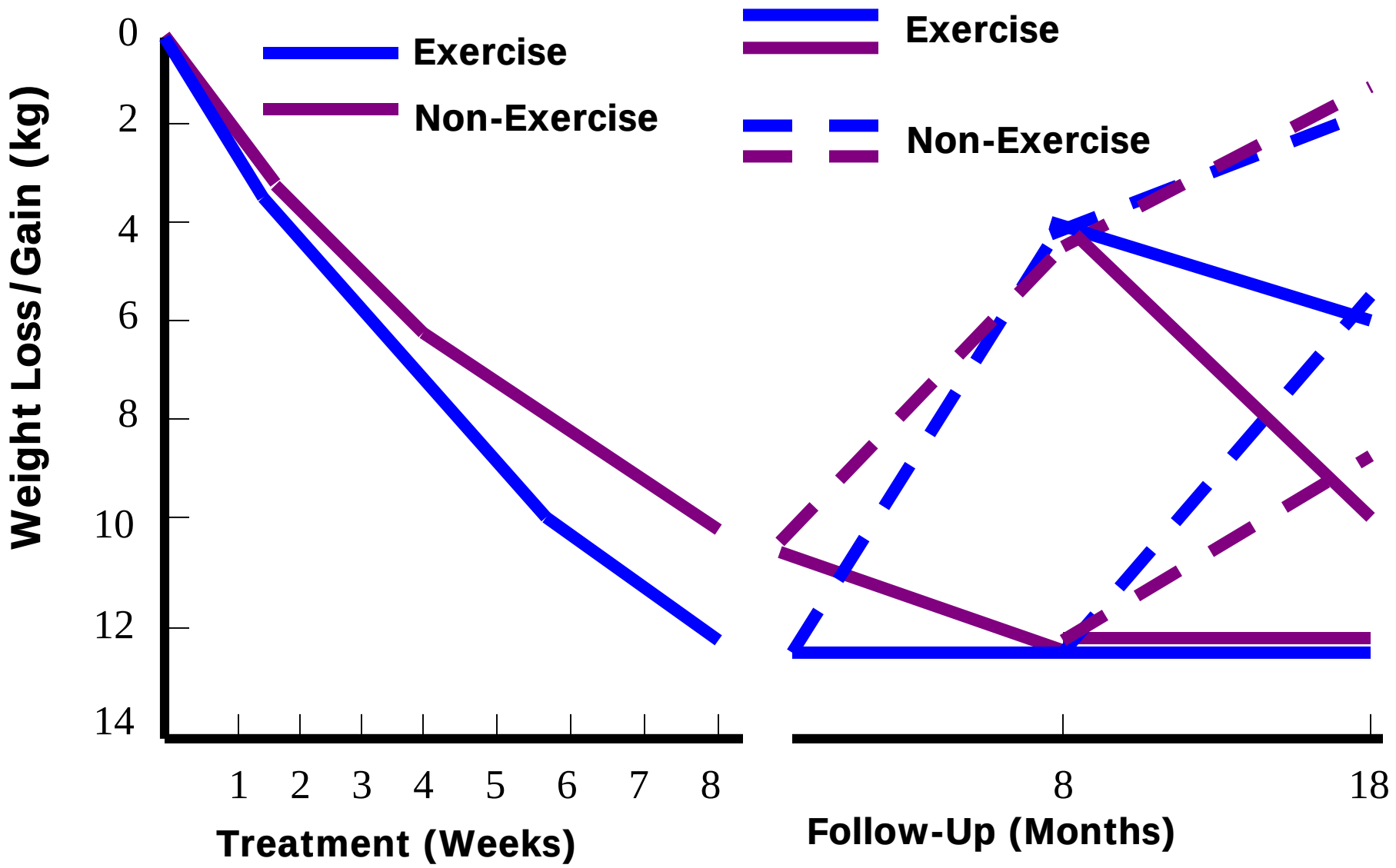
Poirer et al. Circ 2011, Mechanick et al. Obesity 2009
Donnelly Med Sci Sport Ex 2009, IOM 2002
Saris et al Obes Review 2003,
http://www.health..gov/paguidelines/pdf/paguide.pdf

Time, Perception, Guidance, Barrier Removal…

- Only 22% of patients of Bariatric Surgical Centers accredited by the American College of Surgeons (ACS) Bariatric Surgery Center Network (BSCN) report having received postoperative exercise consultation.
- Despite BSCN accreditation requirements to establish procedures for exercise counseling.

Peacock JC, Zizzi SJ Surg Obes Relat Dis. 2012 Nov-Dec; 8(6):777-83.

Exercise for Weight Maintenance



Pavlou KN. *Am J Clin Nutr*. 1989.

Physical Activity & Mets...What's your intensity?

MET Categories

Light < 3 METs

Driving your automobile = 2

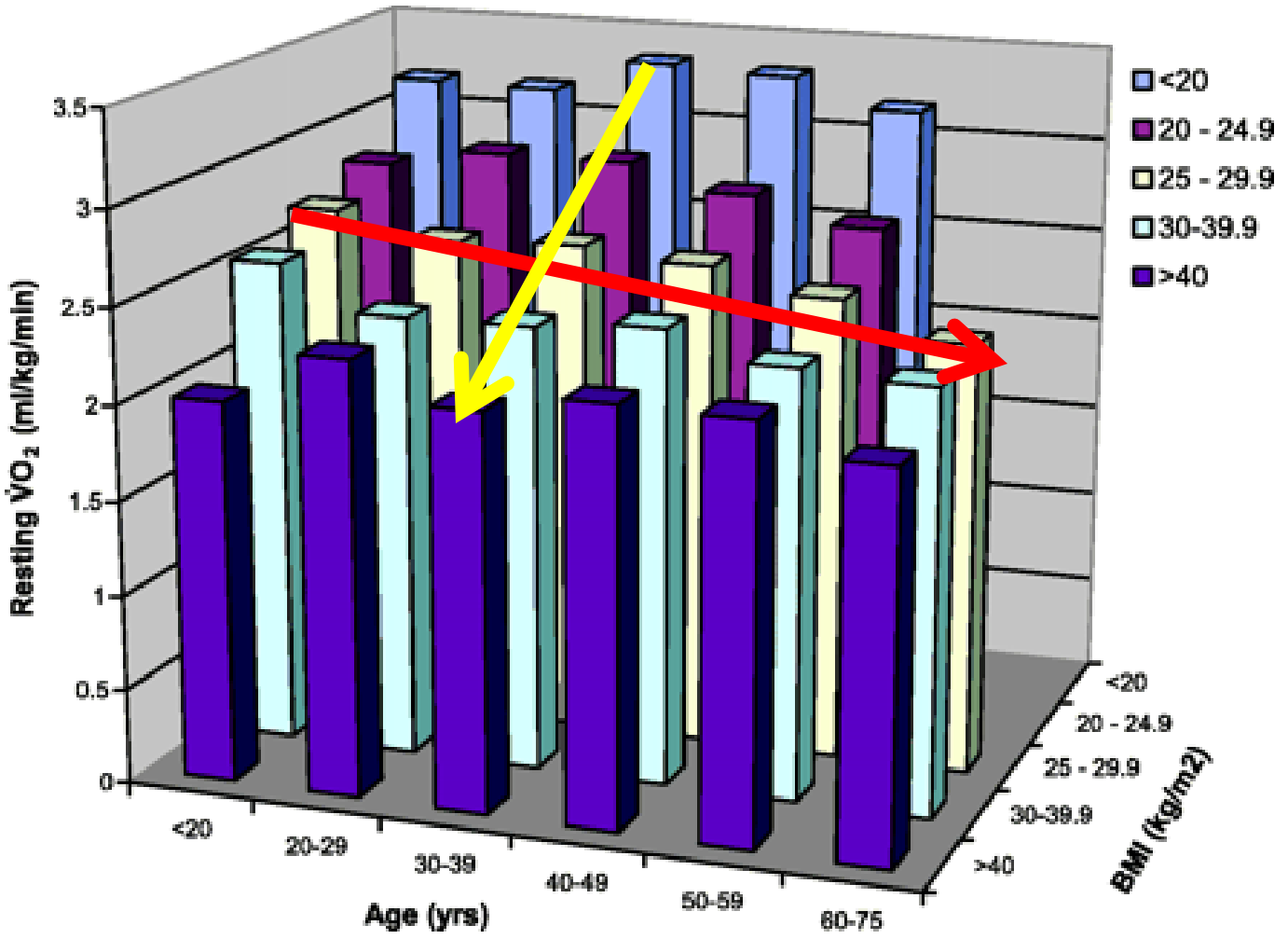
Moderate = 3-6 METs

Walking 4 mph, brisk pace = 5

Vigorous > 6 METs

Carrying 25-49pds upstairs = 8

Cardiorespiratory Fitness by Age & BMI



Byrne et al. J Appl Physiol 2005 Sept 99:1112-1119

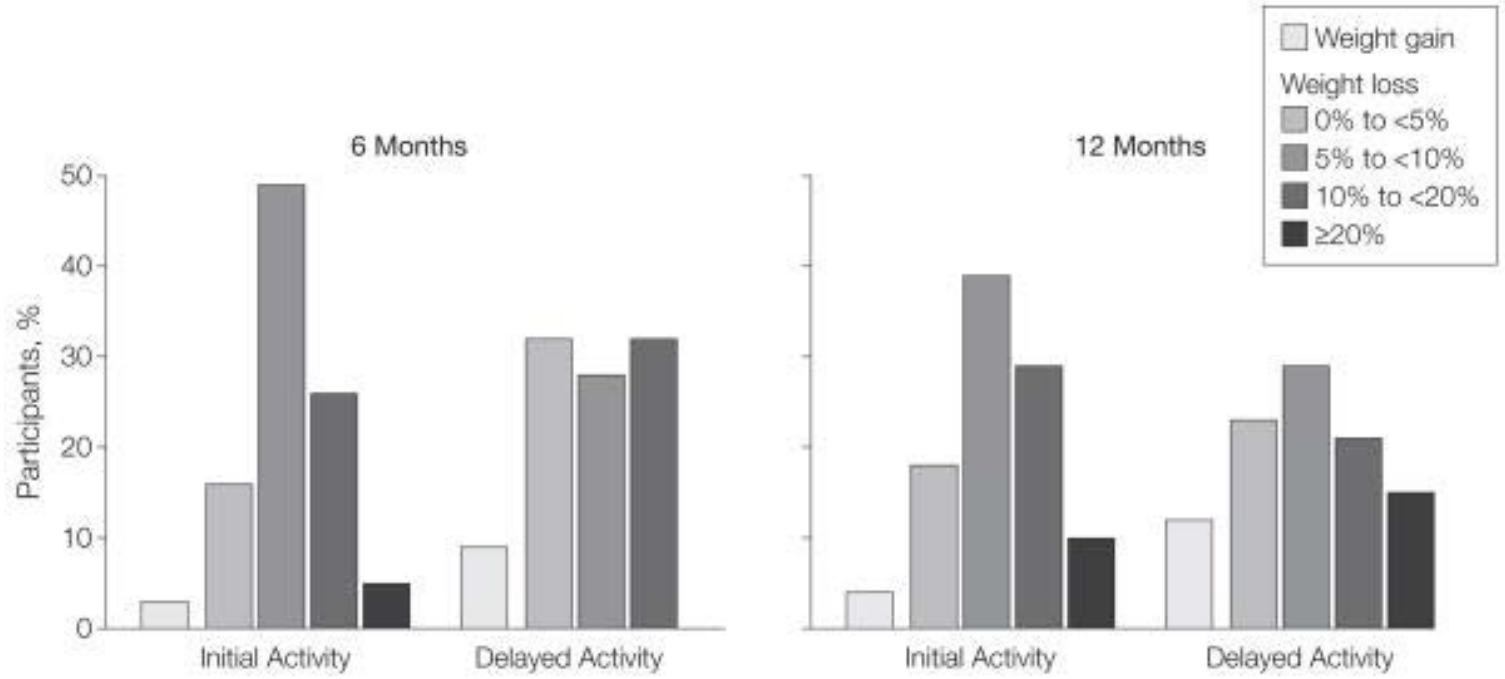
RPE Scale
Correlates with HR

Rate of Perceived Exertion

- **1-2** Extremely easy. You can easily carry on a conversation.
- **3** Very easy. You can converse with almost no effort.
- **4** Moderately easy. You can converse with a little bit of effort.
- **5** Starting to get challenging. Conversation requires more effort.
- **6-7** Difficult. Conversation requires a lot of effort.
- **8** Very difficult. Conversation requires maximum effort.
- **9-10** Full-out effort. No conversation is possible.

Adapted from Borg RPE Scale
Gunnar Borg 1998

Physical Activity: Now or Later?

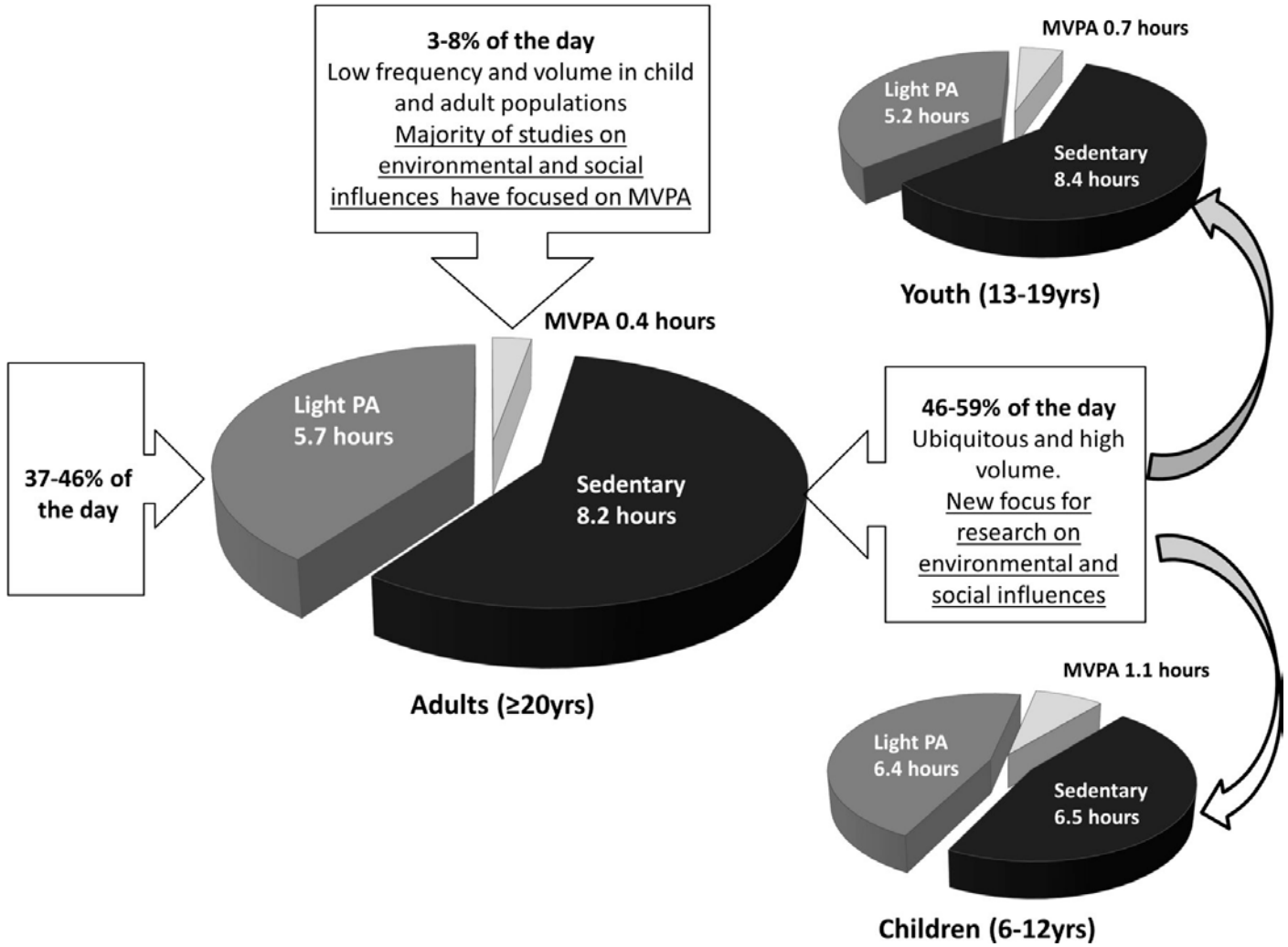


- Initial Activity > Initial Weight Loss
- At 12 mo., weight loss was similar.
- Physical Activity resulted in greater improvement in waist circumference and hepatic fat content

JAMA. 2010 October 27; 304(16): 1795–1802

Can we find more time to be active?

(2003–2006 NHANES survey)

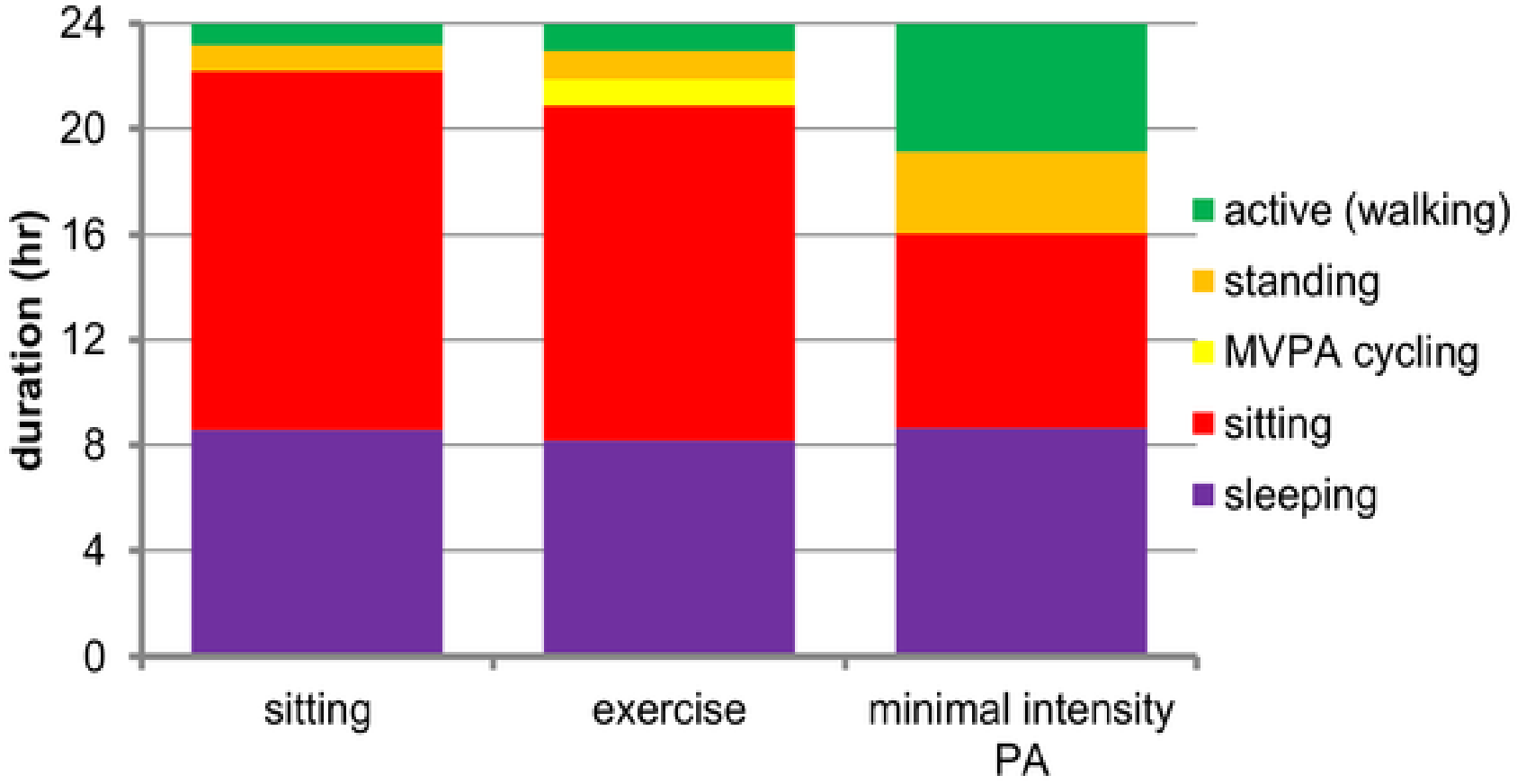


Owen N et al. Br J Sports Med 2014;48:174-177

BJSM

Don’t just stand there……or maybe - Do!

Minimal intensity physical activity (standing and walking) of longer duration improves insulin action and plasma lipids more than shorter periods of moderate to vigorous exercise (cycling) in sedentary subjects when energy expenditure is comparable.



Duvivier BMFM, Schaper NC, Bremers MA, van Crombrugge G, et al. (2013) PLoS ONE 8(2): e55542.

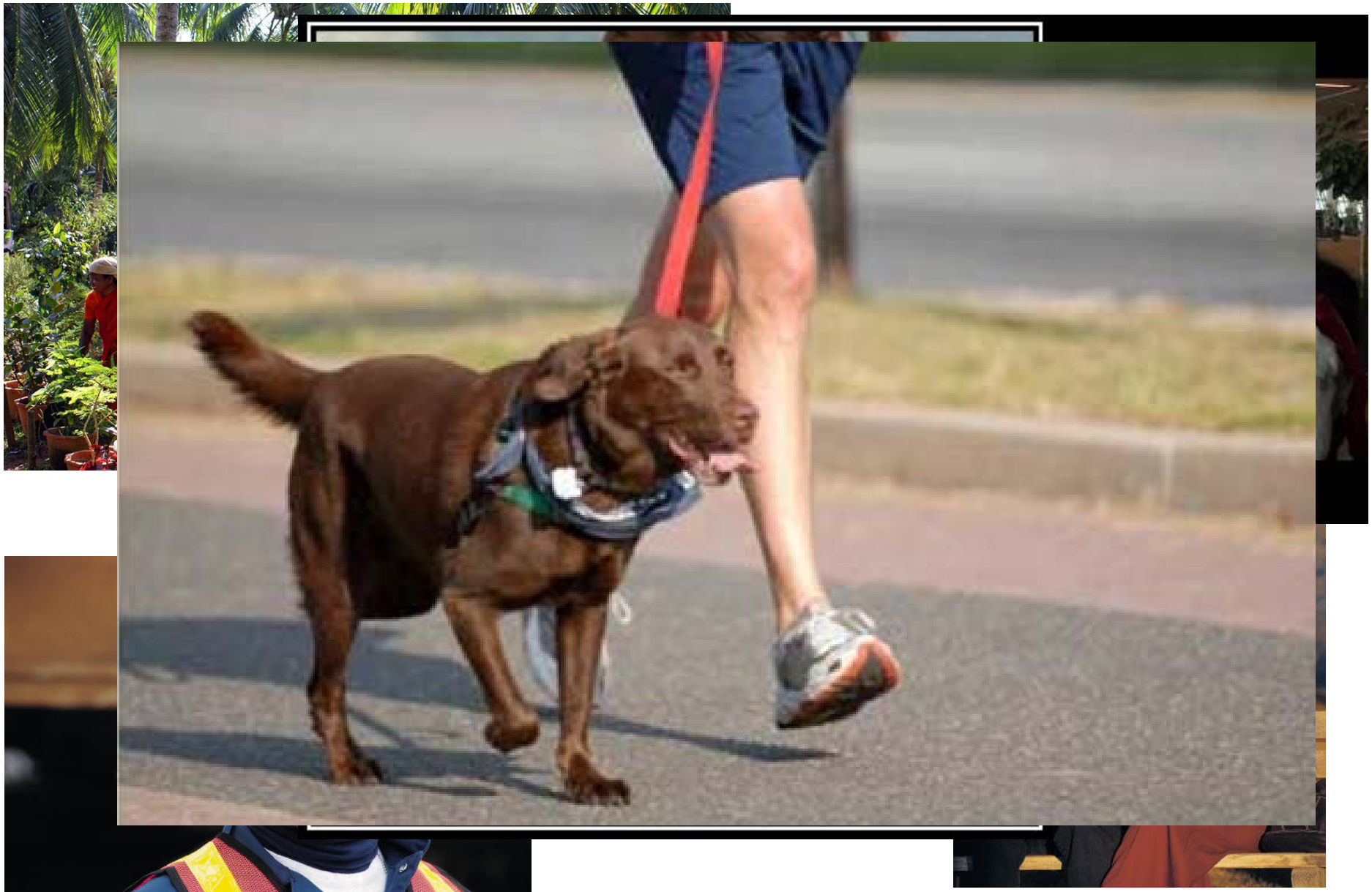
Br J Sports Med. 2014 Feb;48(3):213-9

How can work spaces change?

Individual Strategies

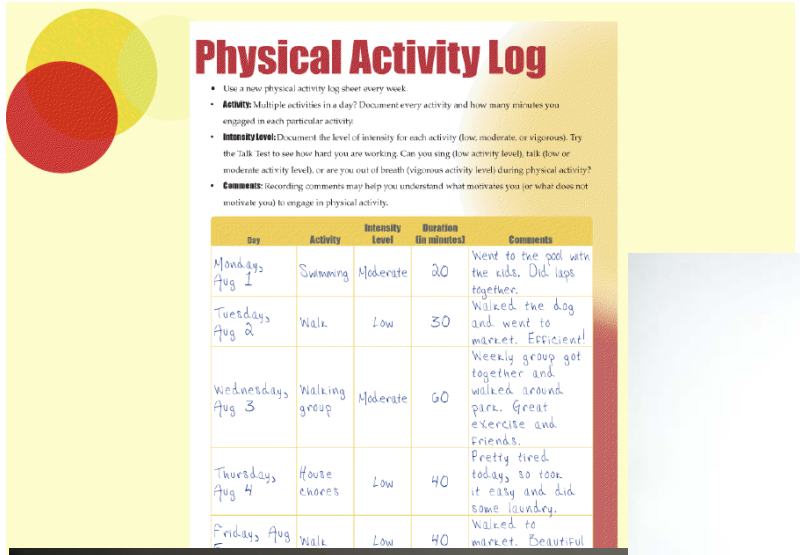
- STAND UP
  - Set a timer (Outlook, Up, Phone)
  - Stand up when someone enters the office or phone rings
  - Stand up when someone else does
- SIT LESS
  - Predetermine “Standing Times” like after lunch, morning, last hour of day.
  - Standing meetings
- MOVE MORE
  - Active lunch breaks
  - Fill water bottle/pick up printing
  - Use the stairs!
  - “Let’s do a walk”
  - Active transport errands
  - Take a commercial break
- Think Outside the Treadmill
  - What interests you?
  - Is there a way to make it less sedentary and more active?
  - Can you do it and stand?

Engineering PA Back into Life



Realistic Resources

Low Risk, High Yield Physical Activity Tools



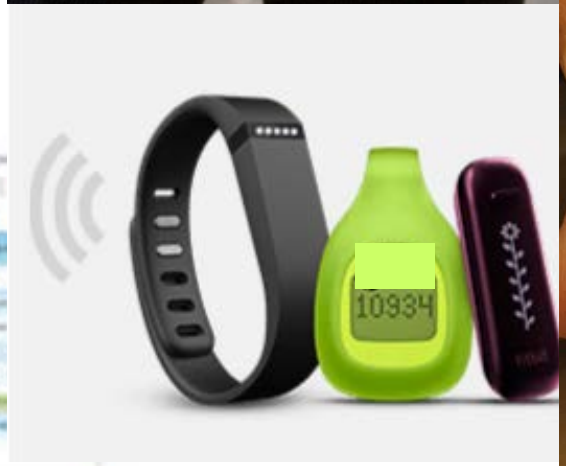
Physical Activity Log

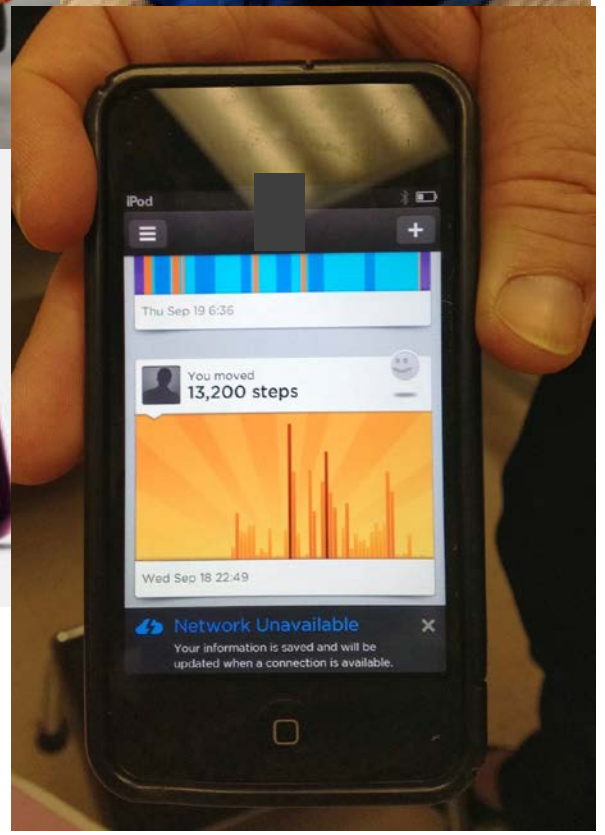
- Use a new physical activity log sheet every week.
- **Activity:** Multiple activities in a day? Document every activity and how many minutes you engaged in each particular activity.
- **Intensity Level:** Document the level of intensity for each activity (low, moderate, or vigorous). Try the Talk Test to see how hard you are working. Can you sing (low activity level), talk (low or moderate activity level), or are you out of breath (vigorous activity level) during physical activity?
- **Comments:** Recording comments may help you understand what motivates you (or what does not motivate you) to engage in physical activity.

Day	Activity	Intensity Level	Duration (in minutes)	Comments
Monday, Aug 1	Swimming	Moderate	20	Went to the pool with the kids. Did laps together.
Tuesday, Aug 2	Walk	Low	30	Walked the dog and went to market. Efficient!
Wednesday, Aug 3	Walking group	Moderate	60	Weekly group got together and walked around park. Great exercise and friends.
Thursday, Aug 4	House chores	Low	40	Pretty tired today, so took it easy and did some laundry.
Friday, Aug	Walk	Low	40	Walked to market. Beautiful

Chronic Disease Data Tracking

- Pedometers
- Accelerometers
- Smart Scales
- Data Tracking by phone/computer
- Platform Connectivity





Trainers, Physiologists, & Therapists..Oh My!

Trainers/Physiologists

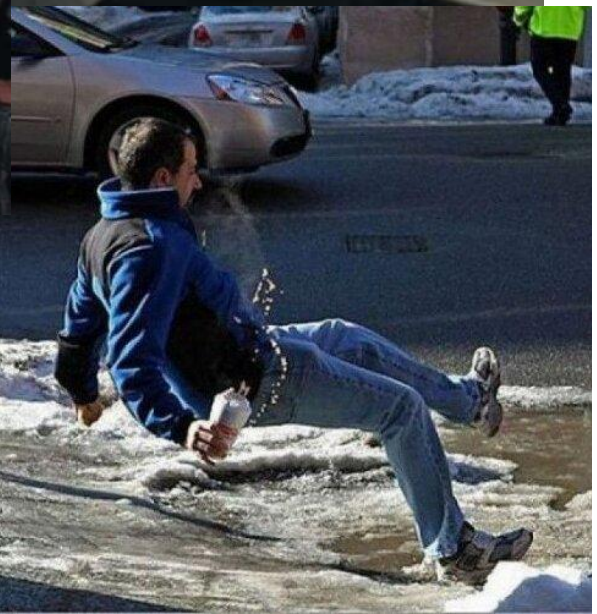
Highly Recommended:

- Graduate Level training
- ACSM, NSCA or ACE = Nat'l Certs
- CSEP Equivalents
- Subspecialized Certifications

Physical Therapists

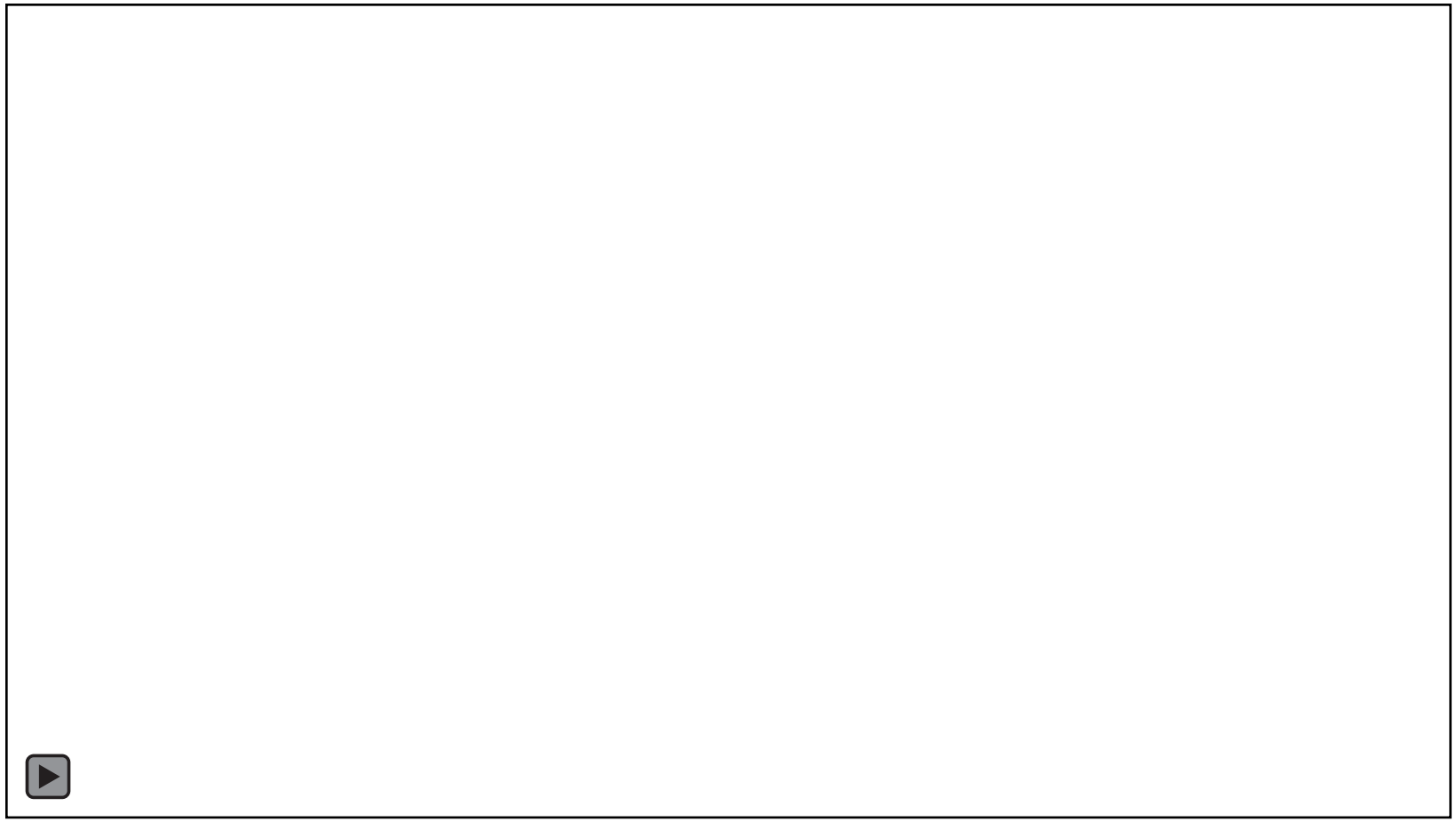
- Key role in orthopedically complicated patients
- Revisit periodically

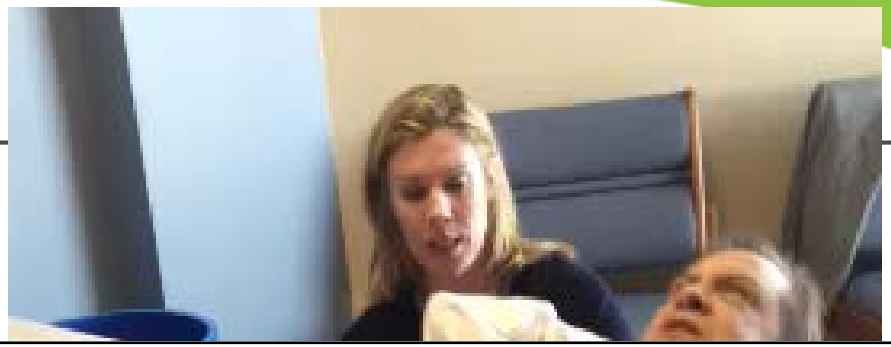
Expose Unexpected Barriers



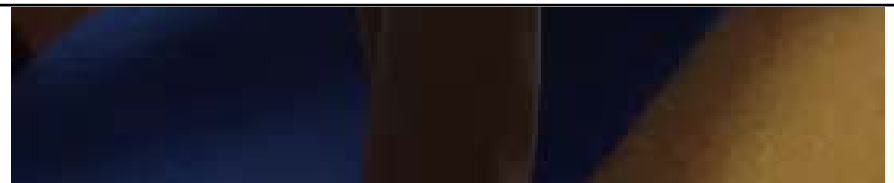
Does your doctor visit look like this…….

In clinic, at home, on the road……

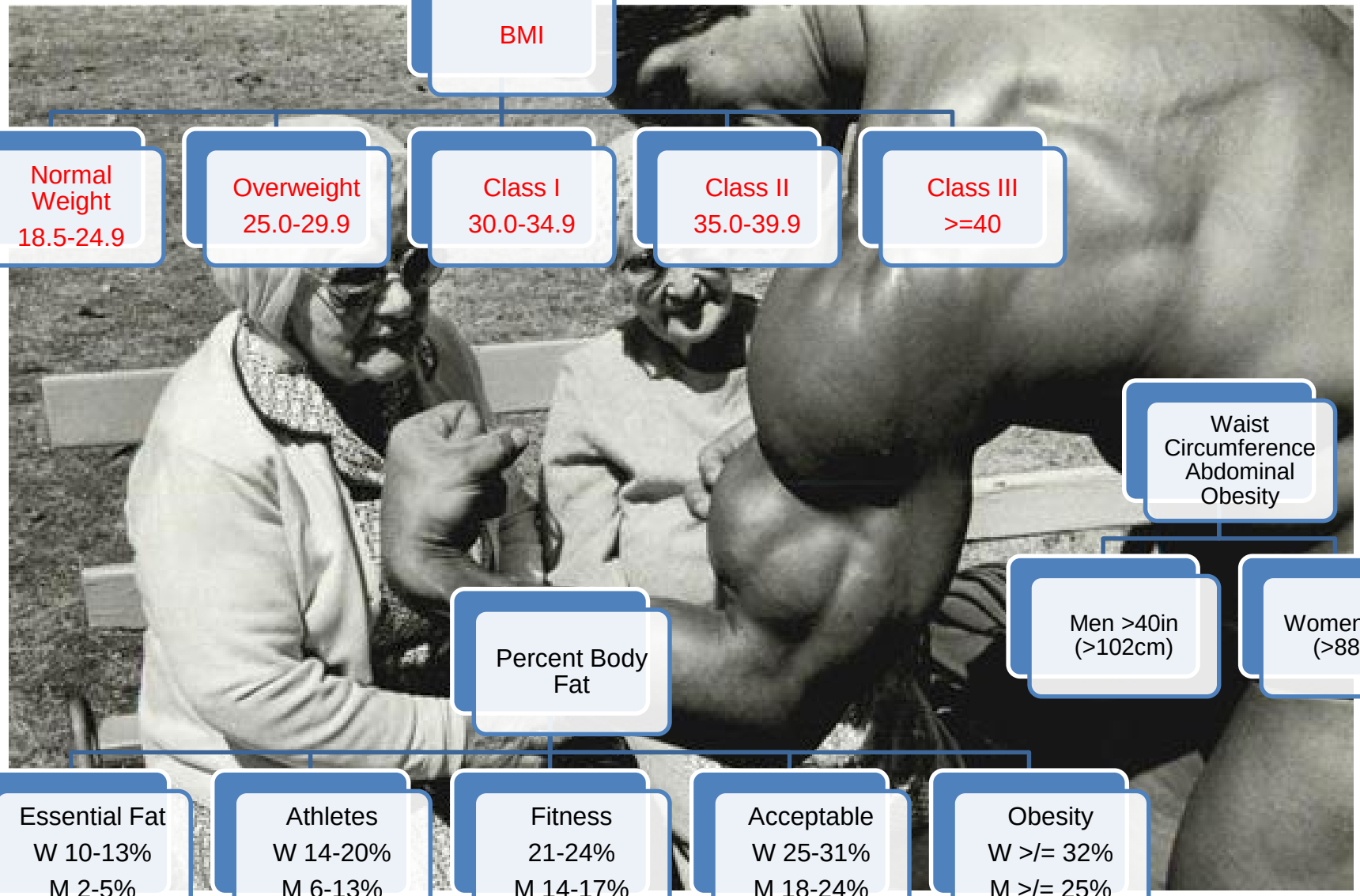




They will rise
occasion



Markers for Success



- BMI
  - Normal Weight 18.5-24.9
  - Overweight 25.0-29.9
  - Class I 30.0-34.9
  - Class II 35.0-39.9
  - Class III >=40
- Waist Circumference Abdominal Obesity
  - Men >40in (>102cm)
  - Women >35in (>88cm)
- Percent Body Fat
  - Essential Fat W 10-13% M 2-5%
  - Athletes W 14-20% M 6-13%
  - Fitness 21-24% M 14-17%
  - Acceptable W 25-31% M 18-24%
  - Obesity W >/= 32% M >/= 25%

Beyond BMI

- Weight, % Total Weight, % Excess Weight
- BMI
- Waist Circumference
- Body Composition
  - Percent Body Fat, Visceral Fat
  - Fat Free Mass or Skeletal Muscle Mass
- Edmonton Obesity Staging System
- Future Responder Biomarkers

Resting Metabolic Rate

- Regression Equations

  Mifflin St Jeor – No more than +/- 10% in at least 70% of measurements

  9% overestimations, 21% underestimations

  Horie-Waitzberg – specific to severe obesity

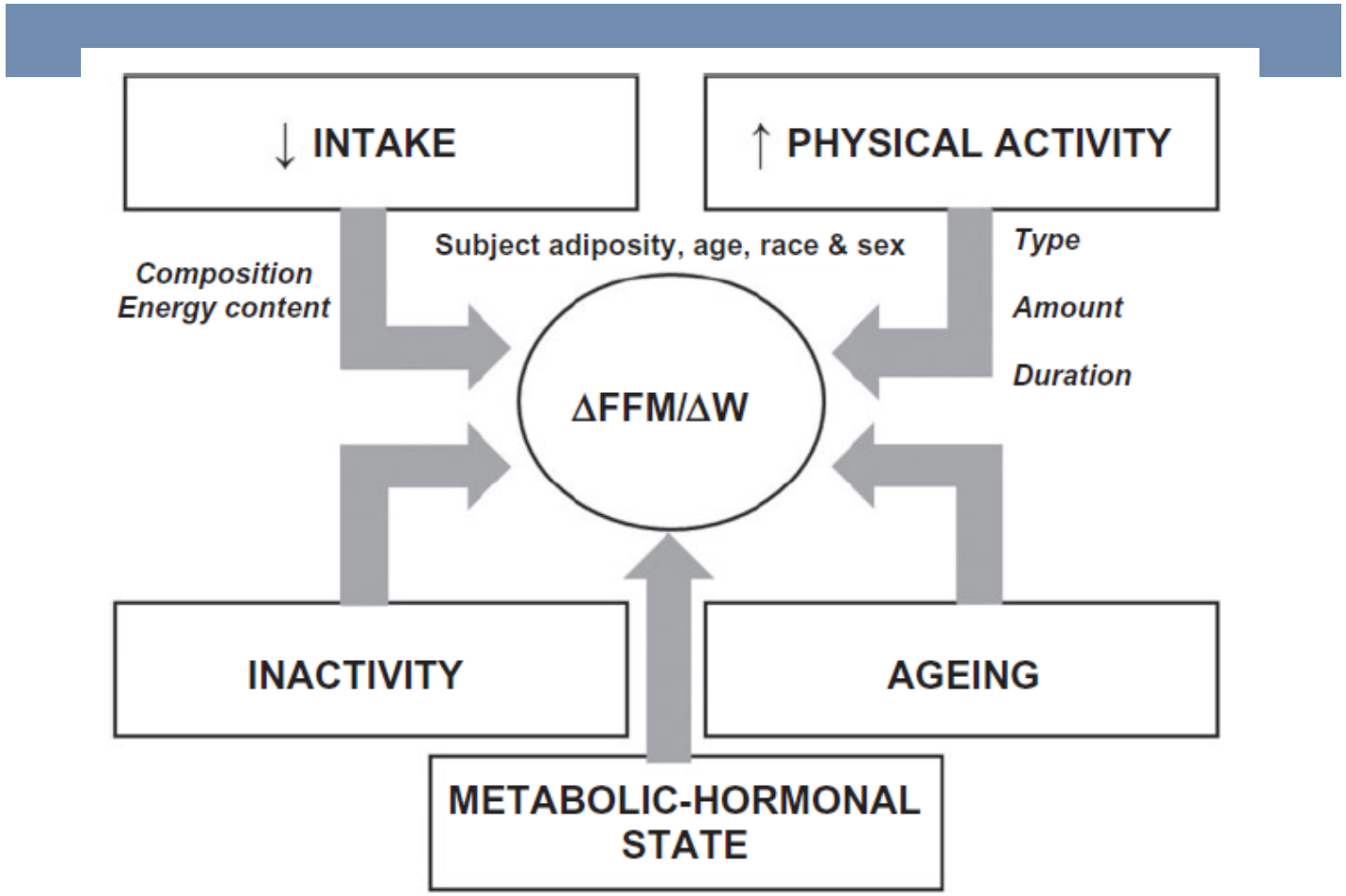
- Indirect Calorimetry

  Inexpensive
  Non-Invasive
  Reimbursable

- Presurgical, Postsurgical intervals and at goal.

Horie et al Clin nutr 2008
www.andevidencelibrary.com

Main Influencers of FFM loss during calorie restriction



Heymsfield et al. Obesity Reviews 2014

Quarter FFM Rule

- "Approximately 1/4th of weight lost will be FFM."
  - At best quarter FFM is an approximation and appears to underestimate.
- Fat Free Mass loss is not constant but varies over time with larger changes observed earlier.
  - Diet related weight loss body composition differed between early and later phase of food restriction.
- Delta FFM/Delta W
  - FFM =majority in early phase (5-26 days)
  - FM = majority in late phase (300days in patients with obesity)
- Initial FFM - The leaner the subject is the greater the FFM loss when placed in negative energy balance. (Forbes Rule)

Heymsfield et al 2011 and 2014
Keys & Brozek 1953
Grande 1961

Moderators of Fat Free Mass

- Physical Activity + no caloric restriction
  - reduction in FM with no or small increases in lean tissues
- Physical Activity + calorie restriction
  - whether cardio or strength cuts FFM loss approximately in half.
- Inactivity leads to FFM loss

  Low CHO

  < Low Glycemic

  <Low fat

Aging

- Disassociation of ΔFFM from ΔW in children with obesity during weight management and growth
- FFM loss = 1.5kg/decade
- " Considerable loss of FFM is expected…to attain the expected body composition at the lower BMI. 35-40% in men. 30-35% in women

Chaston et al 2006, 2007
Le Blanc et al 1992
Forbes et al 1999

Body Comp Analysis, Obesity, & Surgery

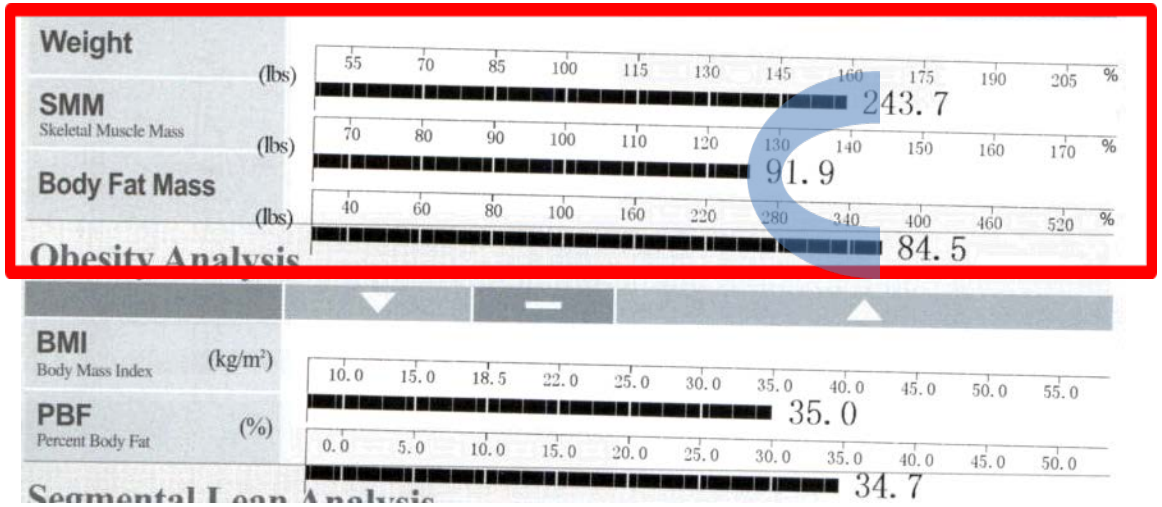
- Rapid weight loss results in significant FFM loss.
- Increased FFM loss is related to negative clinical and nutritional outcomes.
- Variation in tissue hydration and abnormal body geometry may affect results if using Bioelectrical Impedance
  - Overestimation of FFM
  - Underestimation of FM
- Dexa Scans – gold standard, not feasible for repeated measures in clinical practice and table weight issues.
- 18% reduction in FFM following surgery places most patients in a state of cachexia.
- Some researchers have reported that up to a 20% loss is “acceptable.
- De Freitas et al reported that 20% of total weight lost following RYGB was FFM loss and corresponded to malnutrition.
- Single frequency BIA is likely insufficient for monitoring Body composition changes in patients with obesity.

Ferreira et al. Nutrition 2013
Carey et al Obes Surg 2006
Waki et al AM J physiol 1991
Coppini et al Curr Opin Clin nutr Metabl Care 2005

Can we protect FFM during obesity treatment?

Initial Body Composition

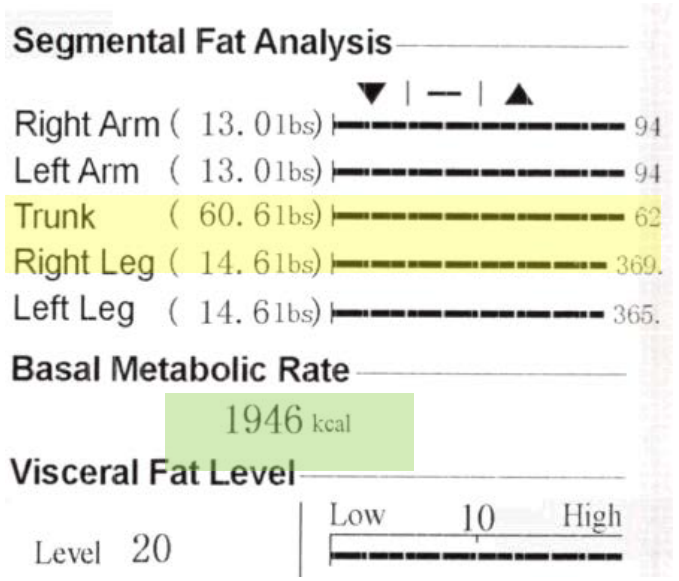
7 mo Follow-up Body Composition



- 26yo male: 7 month Intensive Lifestyle Intervention + Anti-Obesity Medicine
- 37.4lbs =
  - 13% TBW
  - 32% EBW
- 0.9 lb of muscle mass loss = 2% of total weight loss was FFM.
- *25% FFM loss would have been >10x this.

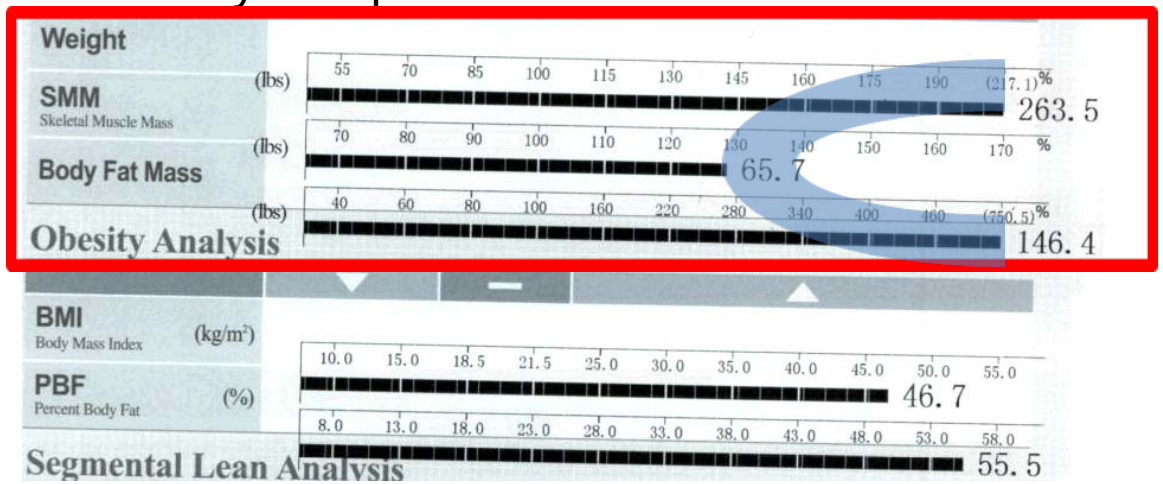
Can we defend RMR & decrease visceral fat?

- 7 months of medical ILI + AOM.
- Initial RMR 2275kcal/d
- F/up RMR 2290kcal/d
- 25% reduction in Visceral fat.

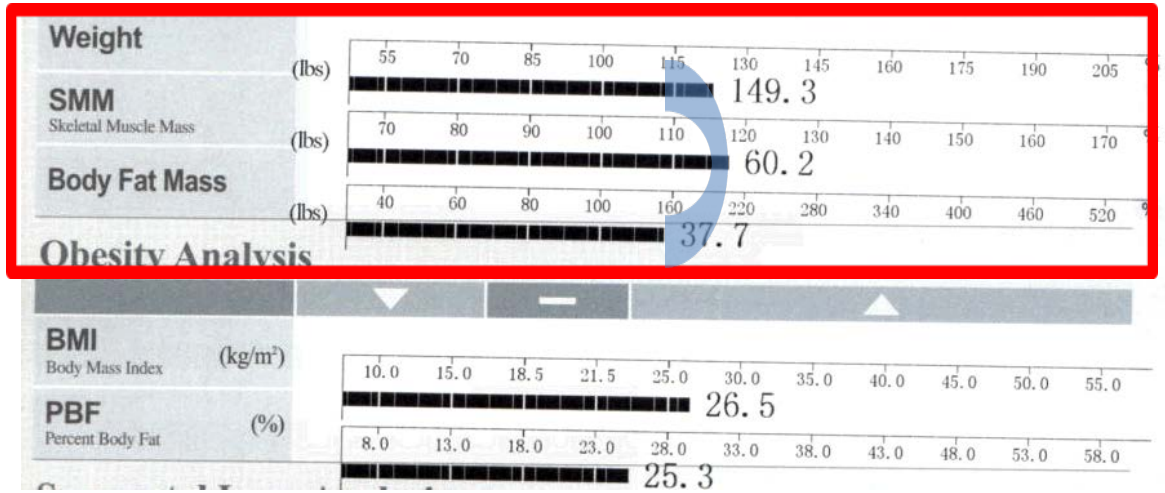


Can we protect FFM during obesity treatment?

Initial Body Composition



11 mo Follow-up Body Composition



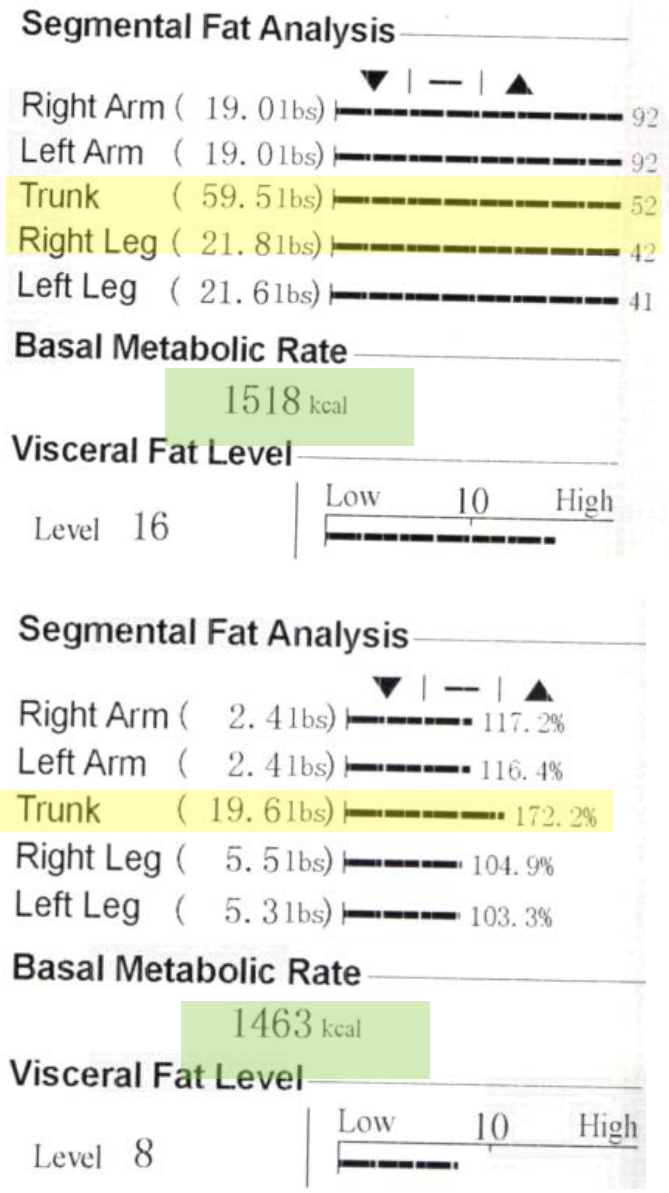
- 58yo female: 11 month Intensive Lifestyle Intervention + Anti-Obesity Medicine
- 114 lbs =

  43 % TBW

  110% EBW
- 5.5 lb of muscle mass loss = 4.8% of total weight loss was FFM.
- *25% FFM would have been 28.5lbs

Can we protect FFM during obesity treatment?

- 11 mo of medical ILI + AOM
- Initial RMR 1973kcal/d
- 7mo RMR 1598 kcal/d 58lbs of SMM
- 67% reduction in Visceral fat.



Physical Activity and Obesity Treatment……

Constructing a whole new road!

Questions?

UTHealth™ | Medical School
The University of Texas Health Science Center at Houston

debbiebhorn@yahoo.com

Weight Loss and Weight Management Webinar Series

<u>Next Webinar, Monday, October 12, 2015:</u>

Pediatric Bariatric Case Study

Dr. Wendy Scinta

Medical Weight Loss of New York

Please check our website
http://www.telemedicine.arizona.edu/app/distant-education/upcoming-workshops

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Please participate in this brief survey:

https://www.surveymonkey.com/r/WRPHTCwebinar

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cne.nursing.arizona.edu/evaluations