

# Nutrition and PCOS



RACHEL BRANDEIS, MS, RD

## Does this sound like you?



- I have tried every thing and my weight does not come off
- I have gained over 30# in less than 3 months and it's all in the middle
- No one believes me --- I don't eat that much, but I am still gaining weight
- I have been told to eat less and exercise more, but NOTHING works
- I crave carbs
- I feel out of control with food
- I am so tired all the time
- I am SO FRUSTRATED

# Understanding Insulin Resistance & Weight Gain



- If you have PCOS, there is a strong probability you have IRS
- Insulin receptors don't respond well to the “normal” amount of insulin produced by your body
- Body compensates and overproduces insulin
- Insulin is a growth hormone – it promotes weight gain
- Can cause rapid weight gain in a short amount of time in the midsection

## A vicious cycle



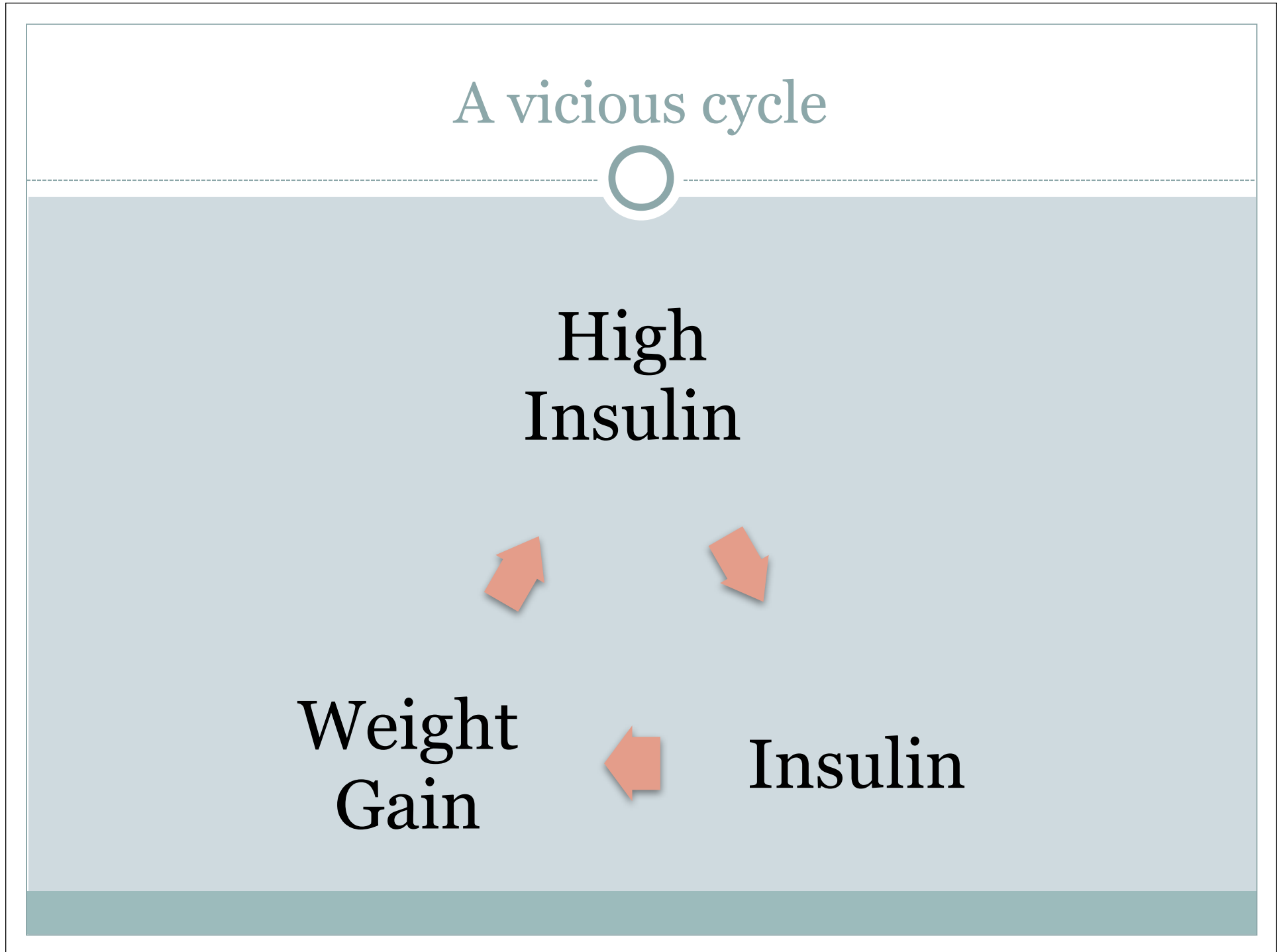
High  
Insulin



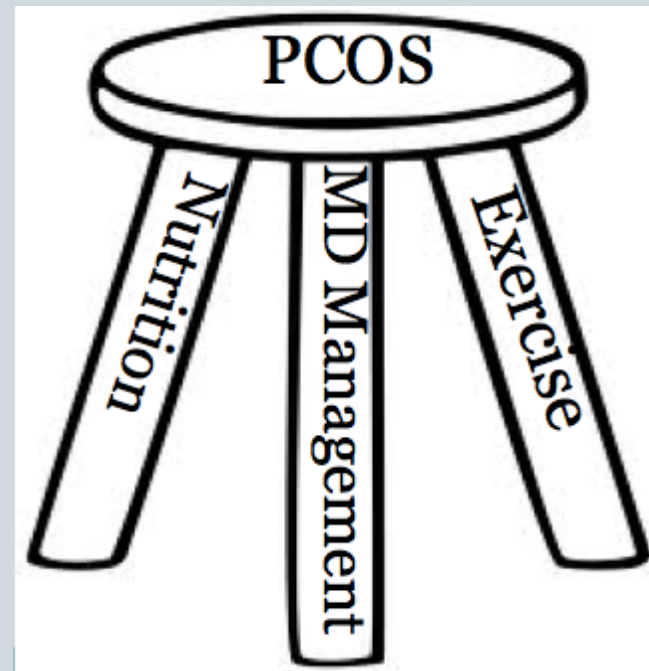
Weight  
Gain



Insulin



- Nutrition
- Physical activity
- Medical Management
  - Androgen blockers
  - Insulin-sensitizing medications



Grassi A. *The Dietitian's Guide to Polycystic Ovary Syndrome*. -9.

Elkind-Hirsch K, Marrioneaux O, Bhushan M, Vernor D, Bhushan R. Comparison of single and combined treatment with exenatide and metformin on menstrual cyclicity in overweight women with polycystic ovary syndrome. *J Clin Endocrinol Metab*. 2008 JLuca Publishing, Haverford, PA 2007.

Cheang KI, Huszar JM, Best AM, Sharma S, Essah PA, Nestler JE. Long-term effect of metformin on metabolic parameters in the polycystic ovary syndrome. *Diab Vasc Dis Res*. 2009 Apr;6(2):110ul;93(7):2670-8.

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# Nutrition component for PCOS: Goals



- 6-9 month plan
- Metabolic Goals: lower insulin levels and control blood sugar spikes
- Behavior Goals: Normalize eating pattern and reduce the glycemic LOAD of meals and snacks by utilizing the correct mix of carb/protein/fat
- Weight loss Goal: 5% of total body weight is effective at improving both metabolic and reproductive abnormalities \*
- Over all : **CONSISTENCY AND PATIENCE**

Azziz R, Woods KS, Reyna R, et al. The prevalence and features of polycystic ovary syndrome in an unselected population. *J Clin Endocrinol Metab.* 2004;89:2745-9.

# Normalize your eating pattern



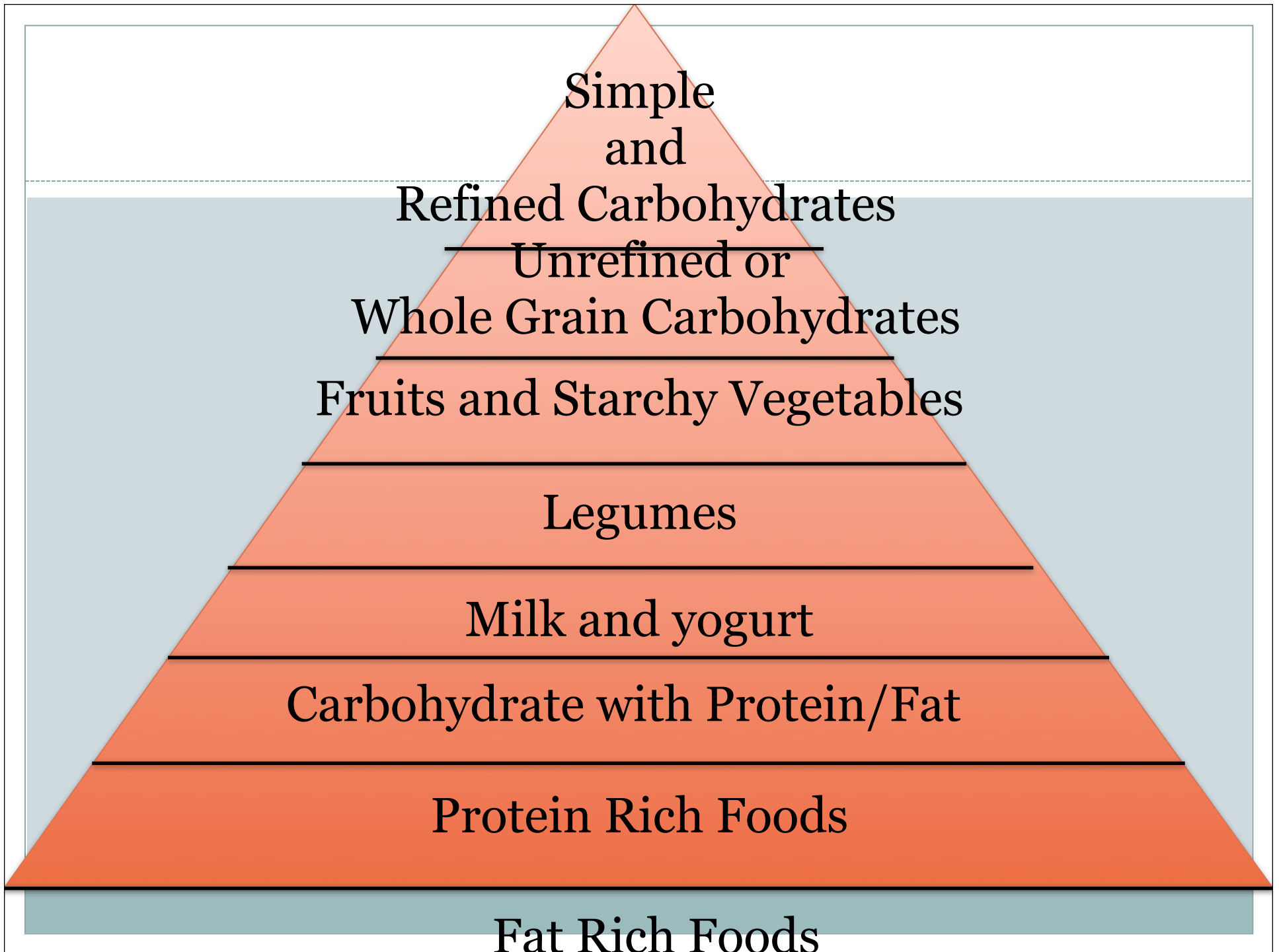
- **Breakfast**
  - Morning Snack (optional)
- **Lunch**
  - Afternoon Snack
- **Dinner**
- No longer than 3-4 hours without eating to avoid blood sugar and insulin spikes
- Eating schedule helps with binge eating/cravings

# What is carbohydrate?



- Grains
  - Refined (anything without the word “WHOLE” as the first ingredient)
  - Whole (1<sup>st</sup> ingredient says “WHOLE”) or Unrefined (oats/brown rice/quinoa/farro)
- Legumes
- Fruits
- Dairy (milk and yogurt)
- Starchy vegetables: potatoes/peas/corn/
- Sweets (candy/juices/soda/sweet tea/sugar)





**What is the best  
eating plan for  
PCOS?**

# Low GI for PCOS



- Low glycemic index (GI) vs. Conventional Diet (CD)
- 50% CHO, 23% protein, 27% fat
- 96 Overweight/obese women with PCOS
- 12 months
- Results:
  - on • Low GI had better period regularity (95% vs. 63% CD), better insulin sensitivity
  - in • Those with high insulin levels lost 2-fold reduction in body fat (modest weight loss) vs. CD

Marsh K, Steinbeck K, Atkinson F, Petocz P, Brand-Miller J. Effect of a low glycemic index compared with a conventional healthy diet on polycystic ovary syndrome. *Am J Clin Nutr*. 2010;92:83-92.

## Effects of Increased Protein-to-



- Controlled, 6 mo. trial, 27 PCOS women
- High Protein (HP) (>40% protein, 30% fat) vs. Standard Protein (SP) (<15% pro, 30% fat); no caloric restriction
- Monthly dietary counseling
- Results: HP had greater wt (7.7 vs 3.3 kg) & body fat loss (6.4 vs 2.1 kg), waist circumference, glucose.
- No difference in lipids, hormones.

Sørensen LB, Sørensen M, Halkier KH, Stigsby B, Astrup A. Effects of increased dietary protein-to-carbohydrate ratios in women with polycystic ovary syndrome. *Am J Clin Nutr.* 2012;95(1):39-48.

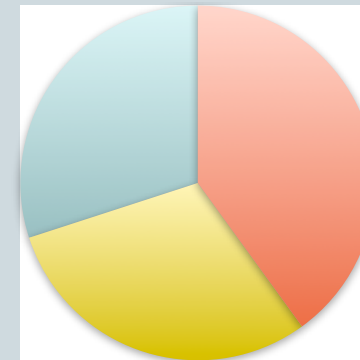
ED FISCHER

I'm  
sick and tired  
of this  
low carb diet



# Is there a PERFECT nutrient mix?

- 40% Carbohydrates (<160 g/day\*)
  - Majority from whole grains and unrefined grains
- 30% Protein (>80 g/day)
  - Lean protein
- 30% Fat (<55 g/day)
  - Majority from mono/poly unsaturated fats
  - **LIMIT** saturated and trans fats



● Carb  
● Protein  
● Fat

\*Based on 1600 calorie intake

# How to lower the Glycemic Load



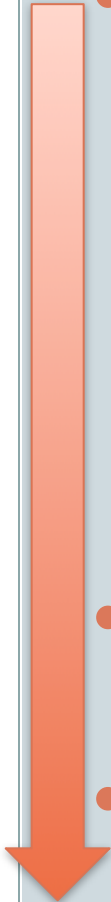
- Always combine a “lean” protein and carb OR a “good” fat and carb

- Good fats:

- ✦ Canola Oil, Olive Oil
- ✦ Nuts/seeds/nut butters
- ✦ Avocado
- ✦ Hummus/tahini



- Protein and fats slow the release of carbohydrate into the intestine
- Never eat carbohydrates “alone”



## Sample menu



- Breakfast: 1 cup blueberries, 1/2 cup cottage cheese, 1/2 whole wheat english muffin and 1 tbs. of pb
- Lunch: 1 1/2 cups dark lettuce and vegetables; 3-5 oz. grilled ck, 2 T balsamic vinaigrette, 1 cup low sodium minestrone soup
- Snack: 1-2 oz. reduced fat or part skim cheese/10-12 whole grain crackers
- Dinner: 4-6 oz. salmon, 1 cup non-starch vege, 2 tsp. olive oil, 1/2 cup sweet potato
- Treat -- <150 kcals



# What does this mean in general?



- Decrease refined carbohydrates



- Increase lean protein



- Increase healthy fats




## Medication component and diet:



- What you eat can impact side effects
- You can choose when you want to feel miserable
- High fat / High sugar
- No skipping meals
- Take as PRESCRIBED!
- Be careful with alcohol

# Exercise and PCOS:

Adaption	Continuous	HIIT
Heart Contractility	X	XX
Heart Muscle Growth	X	XX
VO2 Max	X	XX
Mitochondrial Density -  energy to muscles	X	XX
Increased Insulin Sensitivity	X	XX
Fat Metabolism	X	XX
Glycolytic Enzymes	X	XX
EPOC	X	XX

# HIIT Training Benefits



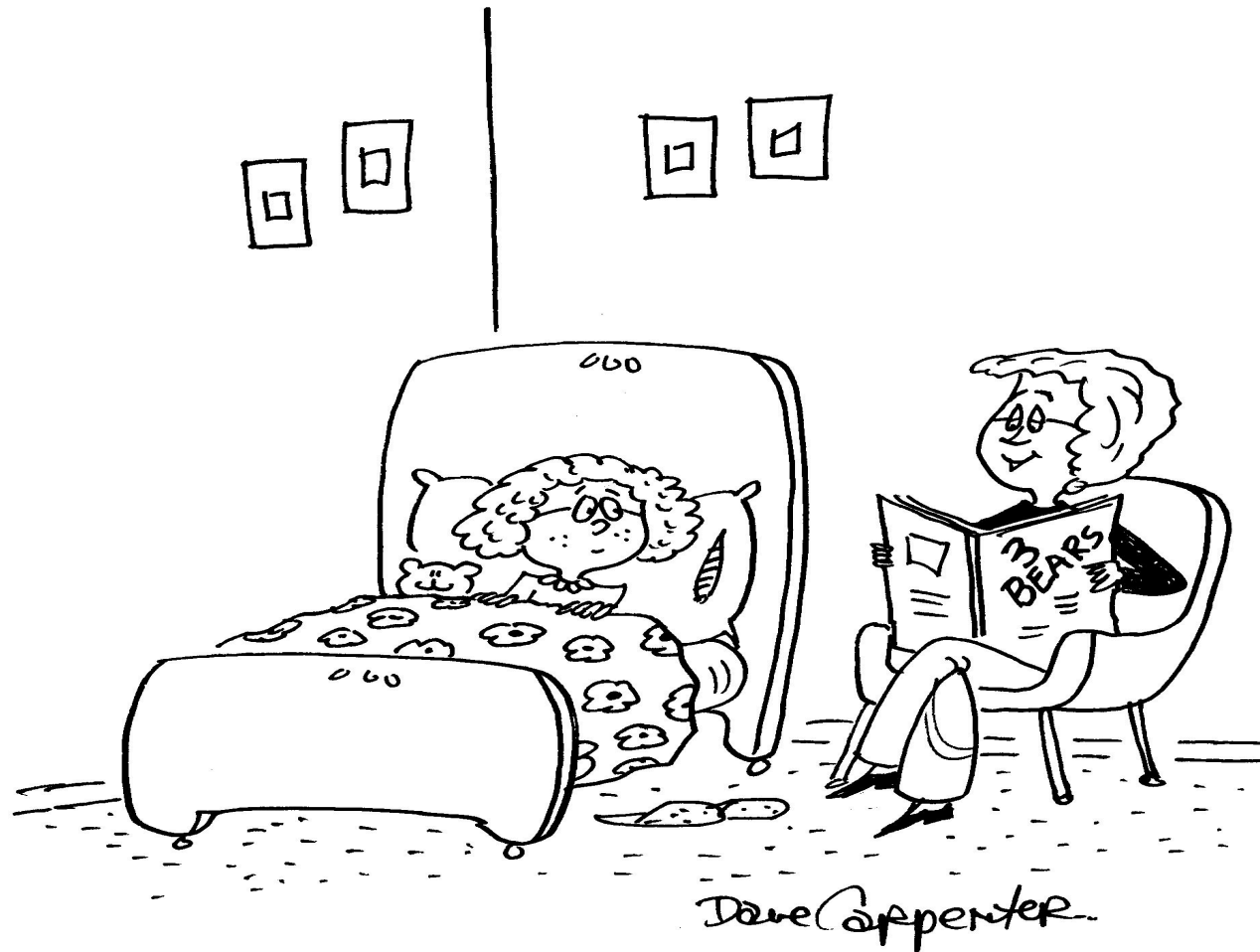
- Improvements in glucose metabolism due to:
  - Loss of body weight
  - Changes in body composition – reductions in total and central body fat
- Improvements in insulin resistance due to:
  - Changes in skeletal muscle
  - Changes in blood flow

# Dietary supplements for PCOS



- **Fish Oil - Omega 3 fatty acids**
  - DHA/EPA
  - May help with inflammation/lower TG/IR
  - 2-3 g/day
- **D-Chiro inositol**
  - Relative of the B-complex vitamins
  - May help with ovulation and egg quality
  - 1.2-4 g/day
- **Resveratrol**
  - Reduces oxidative stress like many other types of antioxidants
  - Anti-carcinogenic, anti-inflammatory, anti-proliferative and antioxidant properties
  - Typical otc dose – 250-500 mg; 2 g used in studies

Effects of resveratrol on proliferation and apoptosis in rat ovarian theca-interstitial cells.  
Wong DH, Villanueva JA, Cress AB, Duleba AJ.  
Mol Hum Reprod. 2010 Apr;16(4):251-9.



**“But then after eating the porridge, all those  
carbs kicked-in and Goldilocks had to lay down  
and take a nap.”**