

Panel: Eating Disorders

Body Image in Relationship to Body Composition

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What is Body Image?

- How you see or picture yourself.
- How you feel others perceive you.
- What you believe about your physical appearance.
- How you feel about your body.
- How you feel in your body.



With athletes, much of how a person feels about themselves has to do with how they perform (which may be related to how they look in subjectively scored sports.)

Thinness is not the same as Leanness

...but the focus on weight rather than body composition masks the difference between them.



Sports Performance

Inherent Conflict



Resistance or Drag

Gravity

Barbell Mass
Body Mass
Opponent's
Body Mass

Drag

Air
Water

Surface Friction

Snow
Ice
Asphalt

Sustainable Power Output

Neuromuscular
Skill

Movement
Economy

Muscle
Efficiency

Aerobic
Power

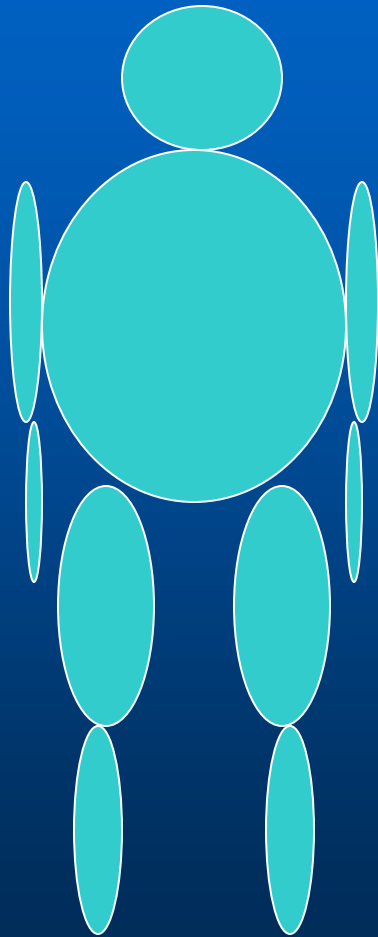
Sustainable
Energy Expend.

Lactate
Threshold

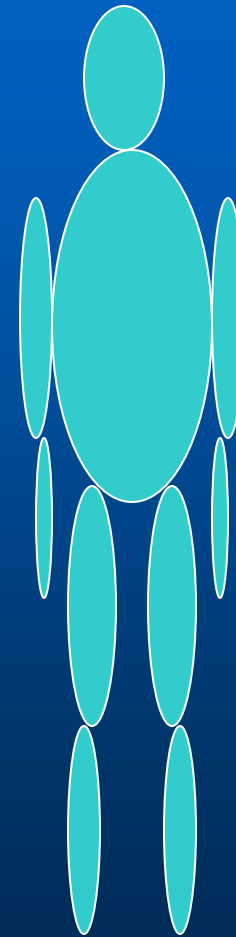
Anaerobic Power
and
Anaerobic Capacity

Adapted From: Lamb, D R, Basic Principles for Improving Sport Performance. GSSI Sports Science Exchange, #55. vol 8(1995), No 2.

Body Profile – Air Resistance



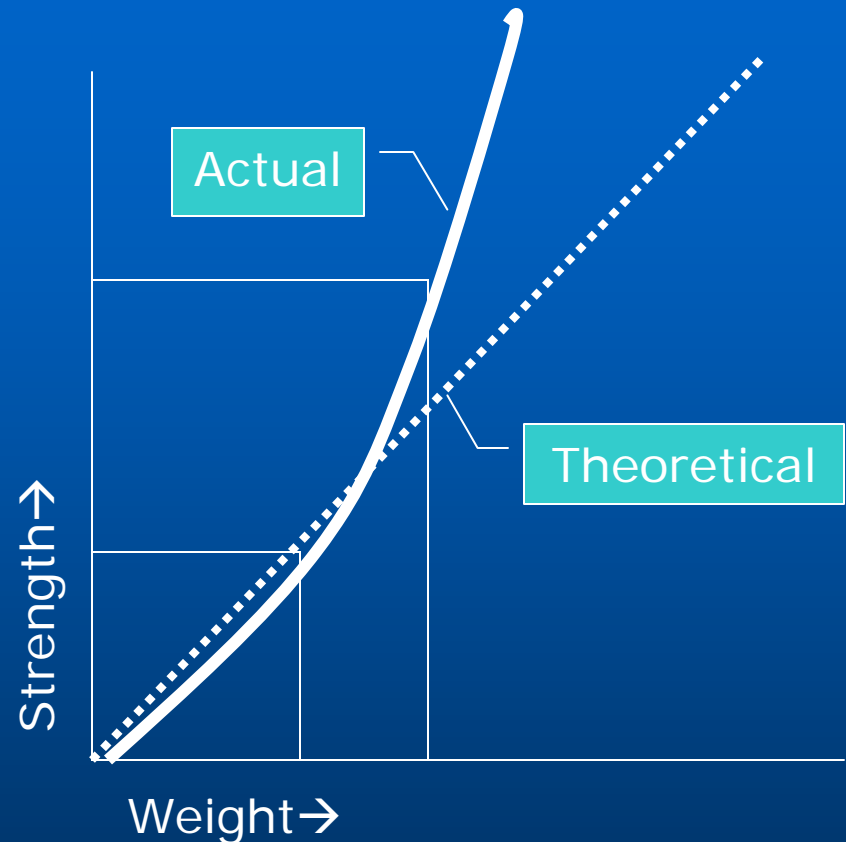
Does Body
Composition and
Weight Make
A Difference?



Can these
people be the
same weight?

Air Resistance

- Elite 100-m sprinters running 10m/s would run 0.25-0.5s faster if they did not have to overcome air resistance (Davies, 1980)
- Air resistance accounts for 16% of total energy expended to run 100m in 10s (Pugh, 1970)



Body profile (thinness) has its advantages in athletic endeavors that are real, but the strength:weight ratio is also critical.

Fact

- An athlete who can preserve energy by being smaller (less resistance) may have a real advantage.
- HOW an athlete achieves the desirable body profile, however, is critically important.

“The Zone” Dietary Breakdown

- Male marathoner, weighing 64kg with 7.5% body fat
 - 2.2 g protein per kg FFM = 130 grams protein x 4 = 520 kcal
 - Protein should be 30% of total intake, so remaining substrates are:
 - 58 grams fat (30%) x 9 = 522 kcal
 - 173 grams carbohydrate (40%) x 4 = 692 kcal
 - Total caloric intake = 1734
 - Predicted caloric requirement > 3200 kcal

Source: “*The Zone and Athletic Performance*” Cheuvront SN. Sports Med 1999; 27(4):213-228.

Energy and Weight Loss

Logic: A 25% reduction in energy intake will lead to a 25% reduction in weight.



25% less
energy



25% less
weight



Energy and Weight Loss

Reality: Energy expenditure following weight loss is less than would be expected by the amount of weight that was lost.

(Source: Saltzman and Roberts, Nutr Rev, 1995)



Beginning wt



Wt after kcal
reduction



Wt after metabolic
adaptation

Energy and Weight Loss

Reality: Energy expenditure following weight loss is less than would be expected by the amount of weight that was lost.

(Source: Saltzman and Roberts, Nutr Rev, 1995)

Achieving a 30% drop in energy metabolism (i.e., a 30% increase in energy metabolic efficiency) following a chronically very low calorie intake is relatively easy



Beginning wt



Wt after kcal reduction



Wt after metabolic adaptation

Energy and weight gain

Logic: A 25% increase in energy intake will lead to a 25% increase in weight.



25% more energy



25% more weight



Energy and Weight Gain

Reality: In evaluating the change in mass during studies that purposefully overfed subjects, the amount of weight gain is almost proportionate to the amount of overfeeding.

(Sources: Forbes et al., 1986; Roberts et al., 1990; Diaz et al., 1992; Leibel et al., 1995)



25% overfeeding



23% more weight



Energy and Weight Gain

Reality: In evaluating the change in mass during studies that purposefully overfed subjects, the amount of weight gain is almost proportionate to the amount of overfeeding.

(Sources: Forbes et al., 1986; Roberts et al., 1990; Diaz et al., 1992; Leibel et al., 1995)

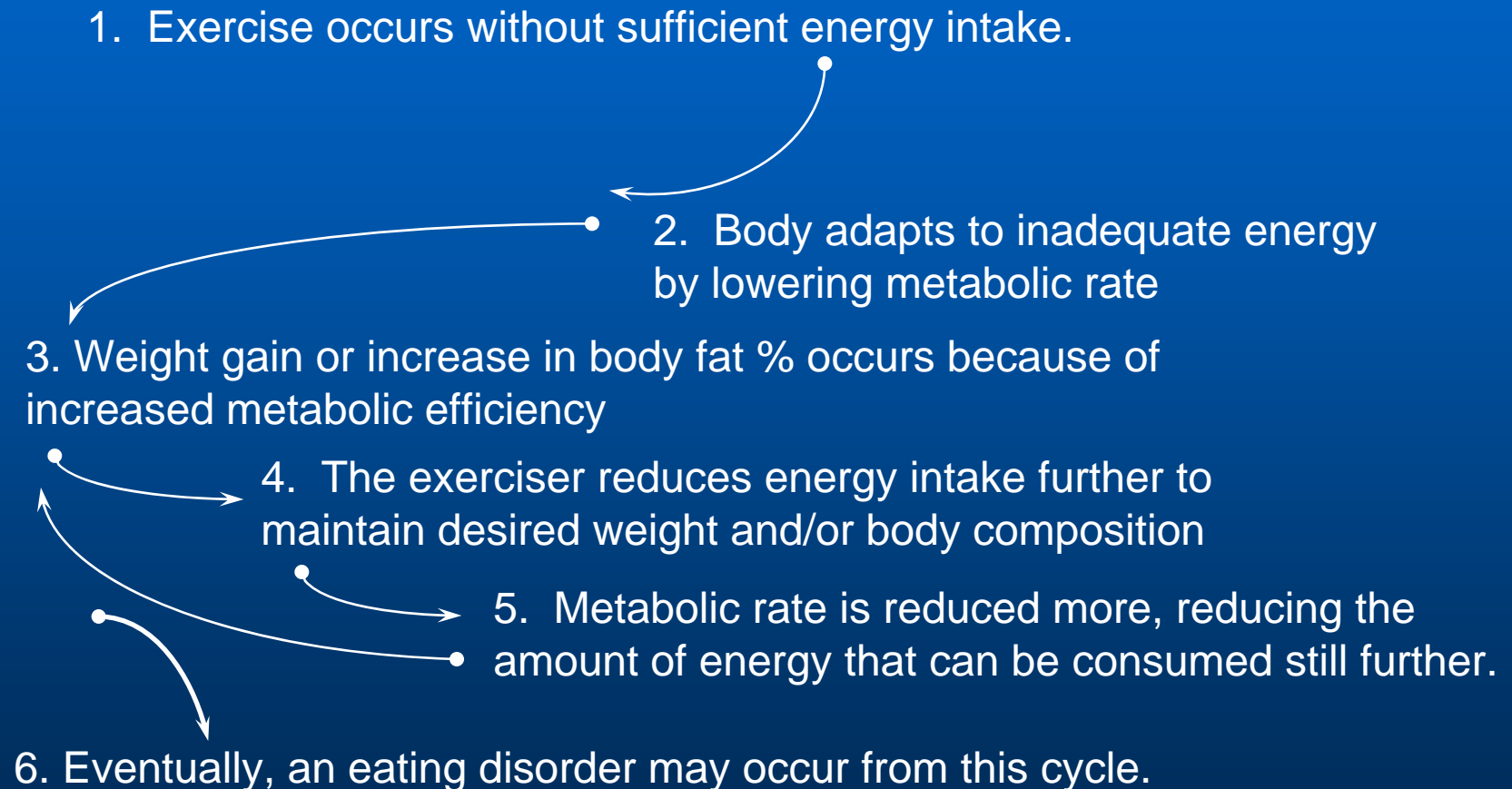
Achieving even a modest 10% rise in metabolic rate (i.e., a 10% drop in metabolic efficiency) is relatively difficult following a pattern of chronic overeating.



23% more weight



Possible relationship between energy deficits and disordered eating.



From: Benardot D & Thompson W. ACSM Health and Fitness Journal 1999; 3(4): 14-18

Treatments May Cause Health Problems

- The more a population diets, the fatter it gets.
 - Weight reduction treatments may make weight and related problems worse.
 - Weight treatments may cause disease sequellae.
 - Dieting/restricting is a better predictor of binging than body fatness (Herman/Polivy).
- Low calorie diets ignore internal appetite/satiety cues, undermining the endocrine and CNS systems.
- Lower population 'dieting' prevalence is associated with better health and longevity, even with higher weight (Roseta).

Treatments May Cause Health Problems

- The more a population diets, the fatter it gets.
 - Weight reduction treatments may make weight and
 - Weight sequential
 - Dieting binds
- Low appetite and endocrine disease risks increase?
 - Healthcare providers should DO NO HARM.
 - Their own research shows an 80 to 95% failure rate for their own interventions.
 - How can these interventions be justified if the intervention fails, the person feels worse, and the disease risks increase?
- A lower population 'dieting' prevalence is associated with better health and longevity, even with higher weight (Roseta).

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Questions