



Pronouncements

**NATA Position Statement:  
Safe Weight Loss and Maintenance  
Practices in Sport and Exercise**

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Horswill CA, Laquale KM, Martin TJ,  
Perry AC, SomovaML , and Utter AC

# Outline

- Delineate relevance of weight loss in sports
  - Who is involved
  - Why weight loss/control practiced
- Distinguish “making weight” from fat loss for health benefits
  - Athletes vs. general population
  - Safety vs. health gains
- Summarize major points of position stand
- Identify role of Athletic Trainer in helping weight-class athletes

# Which Athletes Lose Weight?

- Combat sports
- Non-combat weight restriction sport
  - Youth football
  - Crew
  - Olympic and power lifting
  - Sprint football
- Weight bearing sports
  - Gymnasts
  - Cross-country
  - Ski jumping
- Aesthetic sports
  - Dance
  - Figure skating
  - Gymnastics
- Other: teams with prescribed weight goals, e.g., pro football or basketball

# Purpose for Weight Classes

## *Driven by Sport Governing Bodies*

- Level playing field for competitors
- Reduce injury risks
- Expand participation

# Purpose for Weight Loss

## *Driven by Athletes*

- Enhance success rate (perceived)
  - Power, strength and leverage advantages
    - Over opponent
    - Relative to performance at usual body weight
  - Aesthetic advantage
    - Advantage: judges' scoring
    - Issues: control and perfection
- Make the team – opening in the line up

# Paradox

- Wt-Class Athletes
  - Usually fit and lean
  - Regular, diligent exercise
  - Disciplined lifestyle leads to fitness
  - Low risk for chronic disease
- General Population
  - 2 of 3 are overweight
  - Sedentary
  - Uncommitted to healthy lifestyle
  - High rates of CVD, Type II diabetes, certain cancers

# Irony: Lean Athletes Lose Weight

- How, with little fat to lose?
- Deprivation
  - Food
  - Fluids
- Increase fluid loss
  - Excess exercise to sweat
  - Heat exposure (sauna, whirlpool)
  - Infrequent: diuretics and other cathartics

# Safety Risks vs. Health Benefits

- Weight-Class Athletes
  - Compromised endurance
  - Decreased CV function
  - Decreased ability to thermoregulate
  - Increased risk of heat illnesses
  - Compromised immune system function
  - Risk of overtraining
- General Population
  - Reduced cholesterol
  - Increased HDL
  - Reduced abdominal fat
  - Enhanced insulin sensitivity
  - Decreased blood glucose

# Common Ground

- Safe weight loss follows the same principles for either the athlete, exerciser or sedentary individual.
- Position stand outlines can be used by either group to safely lose weight.
- NATA recommendations are scientifically sound
  - Research based
  - Test of time or identified as needing more science
  - *Based on Strength of Recommendations Taxonomy (AAFP)*

# Summary of Main Points of Position Stand

- Body composition assessment for predicting competitive weight
- Tracking of body composition and progress
- Establishing reasonable rate of loss
- Address
  - Role of diet and exercise
  - Appropriate times of season to reduce
- Consideration of basic nutrient and energy needs
- Role of education and nutrition experts
- Caution on methods for rapid , excessive change in body weight
  - Devices and clothing
  - Exercise protocols and trendy diets
  - Dietary supplements – substantiated by science or not

# Assessing Body Composition

## *Guiding Reasonable Weight Change*

- Methods – general differences
  - Multicomponent
    - Criterion
    - Research
  - 2-component
    - Practical for the field

# Assessing Body Composition

## *Guiding Reasonable Weight Change*

- Methods
  - Multicomponent
    - Criterion
    - Research
  - 2-component
    - Practical
      - Body density
        - » Hydrostatic weighing
        - » Air displacement plethysmography
      - Skinfold thickness
      - Bioelectrical impedance: BIA or BIS

# Assessing Body Composition

## *Guiding Reasonable Weight Change*

- Method errors
- Safe % body fat
  - Lowest, minimal weight if goal is to reduce
    - Males:
      - 5% for college
      - 7% for high school
    - Females: 12%
  - Highest if goal is to gain weight
    - Males: 10 to 22%
    - Females: 20 to 32%

# Critical Assumption - Euhydration

- Euhydration – normal hydration – is a requirement of all methods of body comp assessment
- Methods of assessing hydration
  - Plasma osmolality, [Na], HB and Hct
  - Acute body mass reduction
  - Urine osmolality, specific gravity, conductivity, color
  - Saliva volume, osmolality
- All methods are biased if athletes report hypohydrated

# Effect of Altered Hydration

Skinfolds:

- body mass is lighter but
- skinfolds don't change

# Practical Assessment of Hydration

## *Urine Specific Gravity (USG)*

*Dehydrated  
if USG > 1.020*

- USG

Popowski et al *MSSE* 33:747-753, '01

- Refractometer
- Reagent stix (Bayer®)

- Osmolality

- Conductivity

# Advice

- Using skinfolds for body comp testing
  - Get training
  - Get experience
- Hydration testing
  - Refractometer is more accurate, unbiased than reagent stix
    - More athletes likely to have USG >1.020
  - Recommend clean catch for urine sample
    - +0.001 without it

Horswill CA, et al. Methodological issues of measuring urine specific gravity for hydration status in interscholastic wrestlers. *J Athletic Training* 40(2 Supp): S-40, '05.

# Establishing Reasonable Rate of Loss

- Amount
  - Based on current weight vs target weight
  - Current weight – target weight = mass to loss
- Reduction
  - Reduce 1 to 2 lb of fat per week to maintain FFM
  - ~1.5% of body weight per week
- Individual
  - Mass to lose/2 lb per week = # wk to hit target

# Role of Nutrition and Exercise

- Goal
  - Achieve energy deficit of 500 to 1000 calories per day
- Nutrition principles
  - Consider basal and activity needs
  - Balanced diet: USDA Food Pyramid or “plate” method
  - Moderate and reasonable decrease in energy intake
- Exercise component
  - Moderate and reasonable increase in aerobic training
  - Resistance training helps preserve lean body mass and RMR
- Timing - phase of athlete’s season
  - Off season or pre-season is optimal time
  - Avoid weight loss during season when training and energy demands are greatest

# Seek Advice of Nutrition Experts

- Athletic trainer
- Sports RD's can help
  - Diet assessment
  - Identify gaps or excess
- Other health care providers
  - School nurse
  - Personal family physician
  - Strength coach with relevant degree, education

# Role of Athletic Trainer

- Pivotal in the health and well being of athletes in their programs at high school, collegiate or pro level
- A select group of health care professionals trained and with a passion to care for athletes' health and safety
- Positioned to provide strategies to prevent injury and illness and optimize performance
- Fully capable of applying science for the athlete's benefit in decisions on weight control
  - Hydration test
  - Body composition test
  - Setting target weight

# Unsafe Weight Loss Methods

- Dehydration
  - Active
  - Passive
  - Diet and drug induced
- Effects on performance and health
  - Reduced heat tolerance during exercise
  - Increased risks of hyperthermia and heat illnesses
  - Reduced endurance performance
  - Sprint capacity declines with repeated efforts

# Unsafe Weight Loss Methods

- Calorie restriction
- Effects on performance and health
  - Performance
  - Health factors
    - CV function
    - Cognition
    - Endocrines, growth and tissue maintenance
    - Metabolic regulation and menstrual cycle
    - Immune system and wellbeing
- Eating perceptions
  - Disorders and disordered eating
  - Body image

# Caution on Devices, Clothing, Supplements

They may work but...

- Many lack scientific support as effective
- Most are unsafe

Example: Plastic “sweats” impose hyperthermic threat

*Dramatic weight loss is fluid from muscle & blood volume*

- Some lack physiological relevance

Example: dietary supplement CLA

- Research shows in obese populations, fat loss occurs
- Effect: 0.1 pound of fat loss per week ( $p < 0.05$ )
- *It would take 20 wk (5 mo) to lose 2 lb*

# Summary

- Weight loss in sport will continue
- “Making weight”  $\neq$  fat loss needed by general population
- Help athletes and exercisers mitigate risks via sound approach
  - Make objective assessment – body composition
  - Set target weight and rate of loss based on body fat
  - Use sound nutrition and exercise principles with consideration of basic nutrient and energy needs
  - Utilize nutrition experts
- Continue to serve athletes by educating and clinical practice
- Caution on unsafe methods of rapidly changing body weight



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