

FACTORS INFLUENCING BODY WEIGHT & COMPOSITION

- **GENETIC FACTORS** (25-40% adiposity due to susceptibility genes) body weight & composition is regulated for significant periods, weight loss or gain result in metabolic alterations that resist the maintenance of the new weight loss or gain. Genetic factors influence this.
- **ENVIRONMENTAL FACTORS**
 - **ENERGY INTAKE & MACRONUTRIENT SELECTION** – lifestyle, imbalance of total energy consumption & utilisation
 - **EXERCISE TRAINING & APPETITE** – refuelling, appetite suppression, overcompensation.
 - **PHYSICAL ACTIVITY & ENERGY EXPENDITURE** – frequency, intensity & duration influence energy expenditure, injury, off season, incidental activity, genetic factors
- **SOCIAL & BEHAVIOURAL FACTORS** – food can recreational, emotional, bonding, rewards, pressure may lead to rebellion, alcohol consumption.
- **TAPERING** – reduced energy expenditure can lead to weight gain

DIETARY STRATEGIES FOR WEIGHT AND FAT LOSS IN ATHLETES

Most athletes do not need to loose weight for health reasons.

- **LOW FAT VERSUS LOW ENERGY DIETS**
- **LOW CARBOHYDRATE DIETS** (Atkins/ The zone) not applicable to athletes, loss of muscle tissue, reduced performance, low nutritional adequacy)
- **MANIPULATION OF GLYCAEMIC INDEX** – energy restricted diets based on low GI foods produce greater weight loss than equi-caloric diets based on high GI food, probably due to increased satiety.
- **ROLE OF CALCIUM & DAIRY PRODUCTS** – complex biological mechanisms due to the role of intracellular calcium in the regulation of adipocyte lip metabolism and triglyceride storage.

EXERCISE PRESCRIPTIONS FOR WEIGHT & FAT LOSS

- High versus low intensity exercise – Well trained athletes oxidise substantial proportions of fat at higher intensities than untrained individuals. Although a lower proportion of fat is utilised in the fuel mix oxidised at higher intensities, a greater energy deficit occurs in less time and this results in greater total fat utilisation. Greater fat oxidation in the post exercise recovery period, increased metabolic rate, and possibly a decrease in appetite.
- Mode of exercise & fat loss – weight bearing exercise, especially running promote weight & fat loss in athletes. No explanation for the superior weight control benefits of running. However it is high impact and is associated with a high injury risk.

NEGATIVE ASPECTS OF WEIGHT CONTROL IN ATHLETES

- Menstrual & endocrine disturbance – low oestrogen levels, menstrual cycle interruption, alteration in bone metabolism - osteopenia, stress fractures, long term effects are irreversible.
- Reduced lean body mass & resting metabolic rate – weight loss brought about by dieting results in a reduction in metabolic rate, making future weight loss more difficult. Evidence suggests that athletes lose LBM with dieting even with heavy resistance training, this can be reduced by increasing protein intake.
- Illness & immunity – due to inadequate micronutrient intake, inadequate CHO increases stress hormones associated with decreased immunity,
- Psychological effects & disordered eating – energy restriction can induce mood disturbances, and can trigger disordered eating, body image issues and eating problems.
- Performance decline – low energy, underperformance, under-recovery, staleness, low motivation.

GUIDELINES FOR SAFE EFFECTIVE FAT LOSS IN ATHLETES

- 0.5 – 1KG PER WEEK
- DEFECIT CAN BE ACHIEVED BY DIET, TRAINING OR BOTH
- MODERATE ENERGY RESTRICTION WITHOUT COMPROMISING CHO OR NUTRIENT INTAKE IS BEST ACHIEVED BY THE IMPLEMENTATION OF A LOW FAT, MODERATE TO HIGH CARBOHYDRATE DIET
- PROTEIN INTAKE 1.5-2G/KG OF BODY WEIGHT PER DAY WITH THE UPPER LEVEL IF ENERGY RESTRICTION IS SUBSTANTIAL AS THIS MAY ASSIST WITH SAITY & MAINTENACE OF LEAN BODY MASS.
- FOODS HIGH IN FIBRE &/OR LOW GLYCAEMICINDX MAY HELP APPETITE CONTROL
- CALCIUM INTAKE AT OR ABOVE THE RDI, IDEALLY FROM DAIRY FOODS MAY ALSO ASSIST WITH WEIGH MANAGEMENT
- EXERCISE MODERATE INTENSITY 30-60 MINS PER DAY IN ADDITION TO STANDARD TRAINING, ALTHOUGH CARE MUST BE TAKEN TO AVOID FATIGUE & INJURY.

NUTRITIONAL REQUIREMENTS FOR STRENGTH GAIN

- INCREASING MUSCLE MASS & REDUCING SKINFOLDS SIMULTANEOUSLY ARE MUTUALLY EXCLUSIVE & UNACHIEVABLE FOR MOST ATHLETES, ONE DEMANDS AN INCREASE IN ENERGY AVAILABILITY, THE OTHER REQUIRES A DECREASE.
- PRIORITIES MUST BE ESTABLISHED AND DIETARY INTERVENTION APPPLIED ACCORDINGLY.

NUTRITIONAL REQUIREMENTS FOR STRENGTH GAIN

- MEETING INCREASED PROTEIN NEEDS OF STRENGTH & ENDURANCE TRAINING IS ESSENTIAL IF RECOVERY IS TO BE OPTIMISED AND/OR GAINS IN MUSCLE MASS ARE TO BE ACHIEVED.
- HIGHER FOOD INTAKE OF MOST ATHLETES ENSURES A GENEROUS PROTEIN INTAKE, USUALLY WELL ABOVE THE 1.2-1.7G/KG RECOMMENDATIONS
- 15% OF TOTAL ENERGY PROTEIN

NUTRITIONAL REQUIREMENTS FOR STRENGTH GAIN

- TIMING OF PROTEIN INTAKE IS JUST AS IMPORTANT AS TOTAL PROTEIN.
- CONSUMING A PROTEIN/CHO CONTAINING SNACK IMMEDIATELY BEFORE AND AFTER RESISTANCE EXERCISE CAN HELP TRAINING ADAPTATIONS BY INCREASING THE PRODUCTION OF ANABOLIC HORMONES, REDUCING PROTEIN BREAKDOWN AND SUPPLYING AMINO ACIDS FOR MUSCLE BUILDING.
- MUSCLE GROWTH IS STIMULATED BY AMINO ACID AVAILABILITY SO SPREADING PROTEIN INTAKE THROUGHOUT THE DAY KEEPS OPTIMAL LEVELS AVAILABLE IN THE BLOODSTREAM.
- POST TRAINING SNACKS RICH IN CHO & PROTEIN CAN ENHANCE RECOVERY & REPLENISHMENT OF ENERGY STORES.
- METICULOUS PLANNING OF PRE & POST TRAINING FOOD WILL NOT MAKE UP FOR DEFICIENCIES DURING THE DAY.
- RESISTANCE TRAINING INFLUENCES PROTEIN METABOLISM FOR UP TO 48 HOURS SO MUSCLE BUILDING DIETARY STRATEGIES SHOULD BE FOLLOWED EVERY DAY OF THE WEEK NOT JUST ON GYM DAYS.

COMMON SOURCES OF PROTEIN (10G)

- 35G COOKED LEAN BEEF/PORK/LAMG
- 40G SKINLESS CHICKEN
- 50G COOKED FISH/TINNED TUNA/SALMON
- 1 GLASS LOW FAT MILK
- 2 SMALL TUBS YOGHURT
- 1.5 SLICES LOW FAT CHEESE
- 2 SMALL EGGS
- 4 SLICES BREAD
- 60 NUTS/SEEDS

CARBOHYDRATE RICH SNACKS CONTAINING 10G PROTEIN (RECOVERY SNACKS)

- 250ML-350ML FRUIT SMOOTHIE/YOGHURT DRINK
- 500ML FLAVOURED LOW FAT MILK
- MOST SPORTS BARS(POWERBAR, HIGH5)
- 1 BOWL BREAKFAST CEREAL WITH MILK
- 1 CHICKEN/CHEESE/MEAT SANDWICH & BANANA
- 1 BANANA & YOGHURT
- SMALL TIN OF BEANS ON 2 SLICES TOAST
- 1 BAKED POTATO WITH LOW FAT CHEESE

CONCLUSIONS

- Most athletes do not need to lose weight for health reasons.
- Body weight & composition are determined by many factors.
- Modest reductions in body fat over time for a long term result, focussing on the reduction of fat intake.
- Adequate protein & low GI foods, role of calcium.
- Low CHO diets not recommended
- Additional training/activity medium duration(30-60mins) @ high intensity (just below threshold)
- Examine food behaviour by using a food diary.