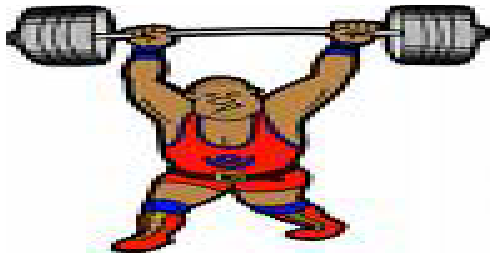
‘Myths & Misnomers of Exercise’



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TOPICS OF DISCUSSION

- FAT (adipose tissue) REDUCTION →

- EXERCISE & IMMUNOLOGY →

- PRE-&-POST-EXERCISE NUTRITION →

Fat metabolism

- ENERGY (DAILY PHYSIOLOGICAL FUNCTIONS) & EXERCISE IS DERIVED ‘MAINLY’ FROM TWO OF THE THREE MACRO-NUTRIENTS……..
- CARBOHYDRATES & FATS
- TERMED……. ‘BETA-OXIDATION’
- PROTEIN SMALL CONTRIBUTION AS ENERGY PROVIDER
- FAT CONTAINS MOST ENERGY – 1GRAM = 9-K-CALS
- CARBOHYDRATE – 1-GRAM = 4-K-CALS
- PROTEIN – 1-GRAM = 4-KCALS

FAT METABOLISM

•AT ALL TIMES DURING REST, LIGHT (UNSTRUCTURED & STRUCTURED) ACTIVITY & UP AND UNTIL HIGH INTENSITY EXERCISE, THERE WILL BE A CONTRIBUTION FROM FAT TO MEET THE ENERGY DEMAND

•*Although – Carbs' provide the majority of energy the higher the intensity……*

Fat metabolism

- At maximal exercise intensity (HRmax/VO2max) nearly all energy is solely provide from carbohydrate (stored muscle glycogen stores)

FAT METABOLISM

- Fat & carbohydrate contribution can be measured via Gas analysis (V02max test in picture) & Respiratory Exchange Ratio (RER).
- Related to the amount of Co2 produced from the amount of 02 consumed

FAT & RER

- ***RER of 0.71 = 100% Fat 'burn'***
- *Aerobic……*

- ***0.85 = Carbohydrates & Fat***
- *Aerobic……*

- ***1.00 = 100% Carbohydrates***
- ***Anaerobic***

‘Spot Fat Reduction’

- ALL ‘CREDITABLE’ RESEARCH SAYS NOT POSSIBLE!!!
- If IT WAS….. WE’D SEE PLENTY OF ‘*WONKY’ PEOPLE*

❑ *Early study Daly & Langsberg (1971) dispelled the MYTH……!!*

❑ In a study of elite tennis players. They theorized that if spot reductions was possible, the non-dominant arm should have substantially more fat.

❑ MUSCLE-MASS GREATER – NO ‘SUBSTANTIAL’ DIFFERENCE IN FAT%

Spot fat reduction

- Another study (Katch *et al.,* 1984) examined the localised effects of a 27-day sit-up programme.

- Researchers found NO difference in the rate that FAT-CELL diameter changed in the abdomen, subscapular & gluteal regions.' (p.503). Indicating no specific site (abdomen) reduction.

FAT ‘myths & misnomers’

- MUSCLE **DOES NOT** TURN TO FAT WHEN YOU STOP EXERCISING FOR A WHILE
- MUSCLE-MASS REDUCES (ATROPHY – SO ***‘USE IT, OR LOSE IT’*** IS TRUE!!),
- FAT WILL INCREASE DUE TO EXCESS ENERGY INTAKE (HYPERTROPHY OF FAT CELLS)
- A ‘**POUND’** OF MUSCLE AND A ‘**POUND’** OF FAT WEIGH THE SAME – **A POUND!!!**
- MUSCLE-GREATER DENSITY, SO VOLUME IS SMALLER (PROTEIN – ACTIN & MYOSIN FIBRILS)

EXERCISE & IMMUNOLOGY

Increase Pathogens

Increase of free-radicals

EXERCISE

Immune system lowered

Reduced Defense Mechanisms

Stored Muscle Glycogen (energy) depleted

Exercise & Immunology

Exercise

Adrenalin

Cortisol

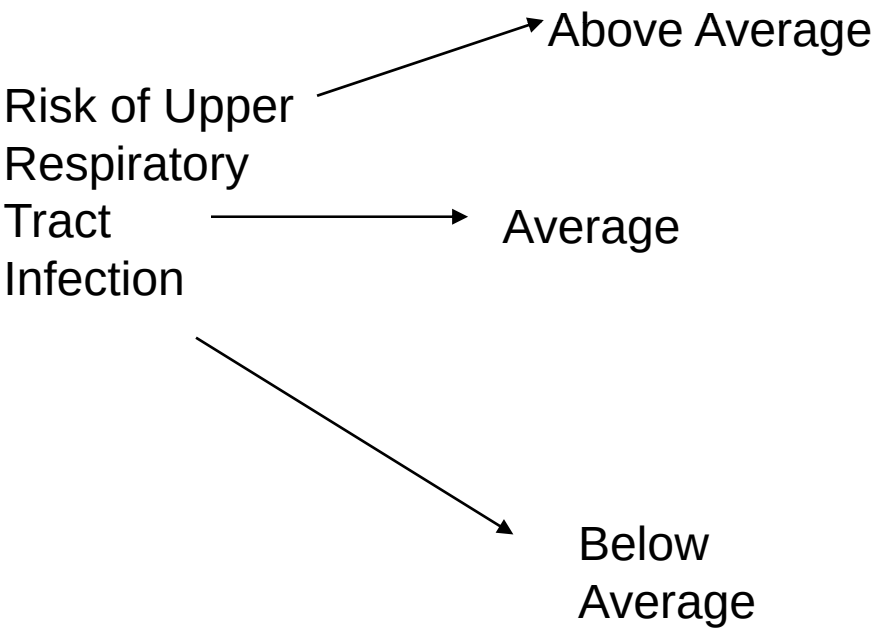
HORMONAL **IMMUNOSUPPRESSANTS**

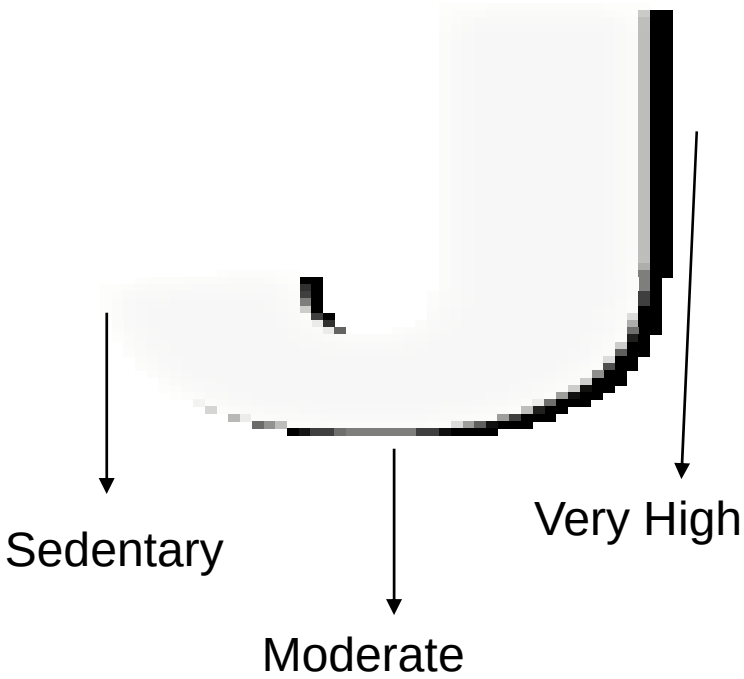
↓

Suppress Defense mechanisms

Exercise & Immunology

Nieman's 1994 model





Exercise & Immunology

- Post-exercise Immune system lowered
- Exercise causes release of immuno-suppressants – increase risk of URTI
- Oxidative-stress (using oxygen for energy metabolism) increases ‘Free-Radicals’ – Molecules that can inhibit muscle contraction and cause muscle fatigue
- Using anti-oxidants (VIT C) may be effective

Exercise & Immunology

- Recent Work By Doran (2003) found moderate exercise was beneficial in increasing salivary immunoglobilin in HIV/AIDS patients
- Exercise below 75% HRMAX
- Exercise above this was detrimental

Exercise & Immunology

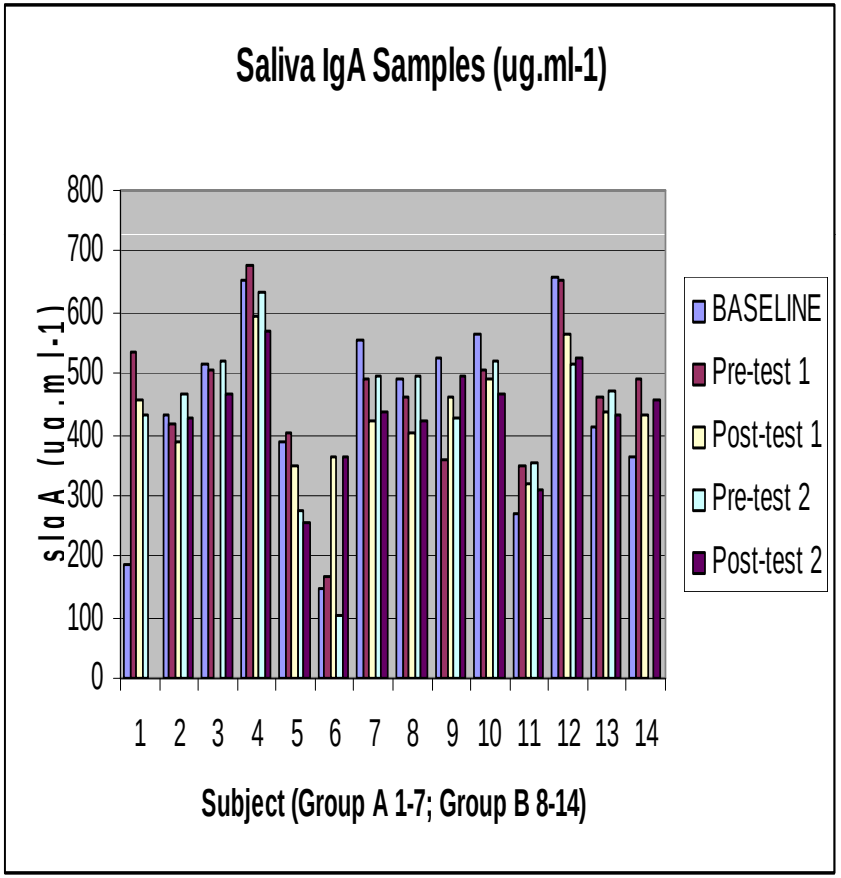
- Therefore…….
  ……
  …!
- ***'No Pain No gain' is a <u>Myth</u>***
- ***<u>Moderate exercise is very beneficial</u>***

EXERCISE & IMMUNOLOGY

- Work by Peters *et al, throughout the 90's, found supra-physiological doses of VIT C, helped boost immune system of marathoners & ultra-marathoners*
- *Immunoglobulin was higher and URTI's lower in the supplemented athletes*

Exercise & Immunology

- Wilson (2003) found Vitamin C did not have any significant effect in boosting Salivary IGA (Pathogens scavenger) in Footballers following repeated bouts of standardised exhaustive exercise (HRMAX)



Pre-&-Post-Exercise Nutrition

- Maclaren *et al.,* (2000) suggested pre-exercise meal to be consumed no later than 3-hours before exercise
- Meal should consist mainly of LOW/Medium-GI foods & small amount of protein (E.g., Beans & scrambled egg or bacon (remove fat) – pasta or Jacket potatoes with small amount of tuna – Brown rice, vegetables, small amount of ham, and fruit

Pre-&-Post-Exercise Nutrition

- Most important factor…….. !!!!!
- RATE OF GLUCOSE RELEASE DURING PERFORMANCE

- ‘Slow’ energy-release best for optimum performance

Post-Exercise Food

- ‘Window of Opportunity’
- Up to approx…. 60-90-min post-exercise
- EAT!!!!!!!!!!!!!!!!!!!
- High-GI foods best (White rice, corn, white bread, bananas, raisins, and protein)
- E.G., Tuna sandwiches
- Restore muscle glycogen stores & boost immune system

SUMMARY

- ENERGY DERIVED FROM FAT STORES OCCURS NEARLY ALL THE TIME, UP AND UNTIL MAXIMUM EXERCISE
- ALL RESEARCH SUGGESTS ‘SPOT-FAT’ REDUCTION DOES NOT OCCUR
- MUSCLE-LOSS & FAT INCREASE HAVE NO CAUSAL RELATIONSHIP (ATROPHY OF MUSCLE, AND INCREASED FAT STORAGE DUE TO INCREASED ENERGY INTAKE)
- When **‘run-down’** LIGHT-EXERCISE (<75% HR-max) ***may*** BOOST IMMUNE SYSTEM – HEAVY EXERCISE IS DETRIMENTAL
- ANTI-OXIDANTS MAY BOOST IMMUNE SYSTEM AND PREVEN URTI ILLNESSES, particularly for distance runners
- ‘NO-PAIN-NO-GAIN’ IS A COMMON MISNOMER
- ‘USE IT OR LOSE IT’ IS TRUE
- CORRECT TIMING & TYPE OF PRE-EXERCISE NUTRITION IS IMPORTANT
- EATING SHORTLY POST-EXERCISE IS IMPERATIVE