



## PREFACE

This newsletter is a bi-monthly publication of J & S Health, Fitness and Sports Academy—a gym located in St. James, Barbados. The main purpose of this newsletter is to keep members of the gym informed about current health and fitness trends.

### Quote to Remember:

Many of life's failures are people who did not realize how close they were to success when they gave up.

Thomas Edison

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## Nature vs Nurture....Your Health & Fitness Genetic Makeup



There has been a long going debate in the health and fitness industry as it relates to effect of nature (the incorporation of specific genes within our DNA) verses nurture (the environmental factor which affects how our genetic tendencies are expressed). Early research supported the theory that the expression of such traits and abilities were solely based on genetic makeup (nature) with no impact by the environment of the individual. However, over time there has been a pendulum shift towards a more environmental (nurture) approach. It has been discovered that, while many health and fitness traits are predominately genetically determined, the expression of these traits can be significantly impacted by our actions and our environment. This article will not seek to draw a side on issue of nature verse nurture; however, we will be highlighting a few common health and fitness conditions which are highly genetically impacted.

### Weight Gain/Weigh loss

The FTO gene— The 'fatso gene' as it was originally nicknamed (because it spanned a large stretch of DNA code) is the most significant obesity related gene identified to date. It acts on the brain's hypothalamus and fuels appetite even after a person is full, resulting in an increased risk of obesity by as much as 70%. The presence of this gene within a person's genetic makeup has been associated with higher body mass indexes (BMI), body fat percentages and hip and waist measurements.

The Skinny gene — Each individual normally has 2 copies of each gene (one from each parent) however, sometimes certain sections of a chromosome can be duplicated or deleted, resulting in an abnormal amount of genes. In many cases such duplications or deletions have no effect, however, it has been discovered that when a duplication of a specific group of 28 genes that form part of chromosome 16 occurs persons are more likely to be underweight or extremely thin. It is believed that every 1 in 2000 people have duplicated copies of this specific part of chromosome 16. (Inversely it has also been discovered that persons who have a missing copy of this group of genes are 43 times more likely to be morbidly obese. )



### The Ability to Gain Muscle & Size

Fast-twitch vs Slow-twitch muscle fibers — All muscles contain an assortment of fast-twitch and slow-twitch fibers with genetics determining the distribution and proportion of fast-slow switch fibers within each muscle. Both fiber types can increase in size, however, fast-twitch fibers possess a greater capacity for growth, therefore persons with a greater ratio of fast-twitch to slow-twitch have a greater potential for larger and faster muscle growth.

Testosterone level — Testosterone is a muscle-building hormone (the amount of testosterone in your body helps determine your ability to build muscle), subsequently if your testosterone levels are not high enough it becomes a limiting factor in determining your potential muscle gains. Testosterone levels within your body can be increased naturally and its results can be maximized based on your training regimen as well as your diet.

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Negative-repetition strength training refers to training that emphasizes the negative (eccentric) portion of the exercise. Doing negative reps as the first set of an exercise workout allows for greater than 100% repetition maximum (RM) weight to be used, as many lifters can resist approximately 130% of their 1RM on the negative portion of the rep. Negative-repetition strength training results in overall strength gains through the fact that the excess weight which is used during negative repetition training overloads the muscle fibers which subsequently: (1) induces muscle damage; and, (2) influences the nerves that cause the muscles to recruit more fast-twitch muscle fibers. These 2 factors result in muscle regeneration that leads to larger and stronger muscle fibers, as well as a greater number of fast twitch muscle fibers.

**Negative-Repetition Strength Training Workout Guide & Tips:**

- ◆ Attempt a weight that is approximately 130% your 1RM
- ◆ Resist the weight at a rate that it takes 3 - 5 seconds to complete the negative repetition (if you can resist the weight for longer than 5 seconds add more weight, if you can't resist the weight for at least 3 seconds reduce the weight)
- ◆ Perform 3 sets of 4 - 6 negative repetitions for each major lift (e.g. Bench press, Squats — using a Smith Machine —, Deadlifts). Followed by 2 sets of regular repetitions using a weight that is approximately 75 - 80% of your 1RM.
- ◆ Always use the help of a spotter when performing an exercise for negative-repetitions
- ◆ When using the Smith Machine to perform negative repetitions load the Smith Machine with approximately 70% of your 1RM. Lift the weight through the positive (concentric) portion of the exercise, but resist the weight through the negative portion.
- ◆ For persons not accustomed to performing negative repetition training the delayed-onset muscle soreness which usually accompanies such training can be severe



*Negative Repetition Shoulder Press Training on a Smith-Machine*

Rating					
<b>Time</b>	1	2	3	4	5
<b>Length</b>	1	2	3	4	5
<b>Difficulty</b>	1	2	3	4	5
<b>Results</b>	1	2	3	4	5

**TIPS CORNER**

**Weight loss tip: *Keep A Photo Log***

Keep a detailed photo gallery of your progress. With each set of pictures taken Include a profile shot, frontal shot and rear shot of yourself. This would allow you to analyze your physical appearance and body transformation over time, and allow you to see distinct changes that may not have been possible by simply looking in the mirror. Remember pictures never lie.

**TIPS CORNER**

**Muscle Building tip: *Stay Symmetrical***

Everyone generally has a particular body part or parts which they favor during training and similarly there will be body parts which they would prefer not to include during training sessions. However, despite this fact one should not neglect a body part from your training regiment, as over time this practice can result in muscular imbalances and a greater risk for injury.

## Omega-3 Fatty Acids Help Fight Obesity

Animal studies have found that omega-3s prevented weight gain and reduced fat in overweight animals. In humans omega-3s help suppress appetite, trigger changes in fat-related gene activity and prevent fat deposition. Subsequently, foods such as oily fish (e.g. tuna, salmon, sardines) and various plant sources (e.g. flax seeds, walnuts) that contain high levels of omega-3 fatty acids have been shown to not only help fight obesity but to also help prevent heart attacks, type 2 diabetes, and promote blood vessel health.



*(Obesity Reviews, 10: 648 - 659, 2009)*

## Whey Protein Reduces Post-Meal Blood Sugar Levels

Diets which result in constant large post-meal increases in blood sugar (e.g. high-glycemic index diets which are high in simple sugars) increase the risk of insulin resistance, obesity and ultimately diabetes. A Canadian study found that consuming whey protein supplements with a meal high in simple sugars reduced the post-meal blood sugar response, and providing more whey protein caused progressively lower blood sugar levels during post-meal analysis.

*(European Heart Journal, 31: 1802 - 1809, 2010)*

## Bench Press Muscle Activation Varies Depending On Equipment Utilized

The three most common ways of performing the bench press exercise are with a barbell, dumbbells or on the Smith Machine and while each exercise is effective for building major upper body muscles Norwegian researchers, through the use of electromyography, discovered that muscle activation during the three types of bench presses differed. Their results showed that activation levels were similar between exercises for the pectoralis major and anterior deltoid muscles, however biceps activation was greatest during the dumbbell bench press, while triceps activation levels were greatest when the barbell was used.

*(Journal Sports Science, 7: 1 - 6, 2011)*

## Diet Soda Consumption Linked To Increased Stroke Risk



Many people drink diet sodas instead of their full calorie counterparts because they are calorie-free and that it is generally believed that these low calorie alternatives do not contribute to obesity. However, many recent studies have found a link between diet soda consumption and metabolic problems such as insulin resistance and diabetes. In-fact, a study from Duke university Stroke Center found that people who drank a diet soda every day actually increased their risk of stroke and heart attack by 61 percent. And despite the fact that the researchers cautioned that their findings may not be "cause and effect" since their study did not analyze a wide range of other factors such as the overall lifestyles of the participants, these results are consistent with other recent investigations which also showed that drinking diet soda may have more serious consequences than first believed.

*(Paper presented at the International Stroke Conference, February 9, 2011)*

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1. **False** — Fructose and sucrose are equally fattening because they have the same number of calories per gram
2. **True**
3. **False** — Fresh vegetables do not necessarily contain more vitamins than their frozen counterparts as vitamin content depends on such factors as how fresh the vegetables were before being stored and how long it has been since the fresh produce was harvested
4. **False** — Muscle tissue does not turn into fat, what commonly occurs is that muscle tissue is lost and fat is gained
5. **False** — A woman only needs 15% more calories per day during pregnancy than she did before

## Body Shape, Muscle & Fat Distribution

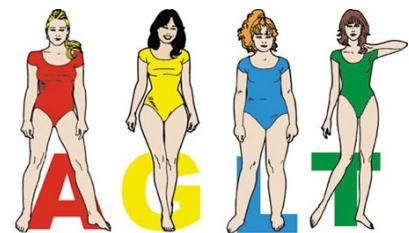
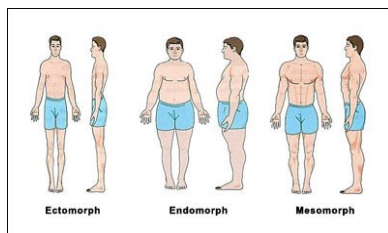
The body type which you have inherited is linked specifically to your genes as studies have suggested that your genes may determine up to 80 percent of your weight and body shape.

Male Body Type - There are 3 general male body types; mesomorph, endomorph & ectomorph.

- ◆ Men with an ectomorph body type have a light build, small joints and long limbs accompanied by lean 'stringy' muscle. These persons are naturally lean, thin and skinny and have a hard time 'packing on' muscle.
- ◆ Men with an endomorph body type have a 'stocky' build and round shape with a greater fat distribution. Endomorphs generally store fat easily and usually require fat loss for visible muscle definition.
- ◆ Men with a mesomorph body type are midway between the body types of an endomorph and ectomorph. Mesomorphs are naturally muscular with an athletic physique with the ability to gain muscle and strength or lose body fat relatively easily.

Female Body Type - There are 4 general female body types; gynaeoid, android, thyroid & lymphatic.

- ◆ Women with a gynaeoid body type are characterized by small to medium shoulders, with a small waistline and curvaceous hips. An increase in size and weight results in the fat distribution first occurring in the buttocks, hips, and thighs, before an increasing proportion of body fat is distributed around the waist and upper abdomen, thus resulting in such persons having a 'pear shaped' appearance.
- ◆ Women with an android body type are characterized by broad shoulders, strong shapely muscular limbs and a rather thick chest and abdomen area with a narrow pelvis. Fat distribution in such persons occur mainly in the upper part of the body and on the front of the abdomen, thus resulting in such persons having an 'apple shaped' appearance.
- ◆ Women with a thyroid body type are characterized by relatively long limbs and fine, narrow bones, thus creating a narrow streamlined shape. Of all the body types, women categorized as having a thyroid body type are the least likely to develop significant weight gain; however, when weight gain does occur the fat is distribution first on the upper thighs, buttocks and abdomen, with the upper part of the body remaining slim.
- ◆ Women with a lymphatic body type are characterized by a generalized thickening and puffiness of the body especially in the limbs which give the appearance of thick arms and legs, with a straight up and down look along their length. In general, lymphatic women have often been chubby since childhood and have a "cuddly baby doll appearance' due to the fact that they retain water easily. Women categorized as having a lymphatic body type tend to find that they gain weight very easily and the fat distribution occurs over the entire body.



## ASK YOURSELF ..... True or False ?

Score: \_\_\_\_\_ out of 5

[Answers on bottom of page 3](#)

1. Fruit sugar (fructose) is less fattening than table sugar (sucrose).
2. Some foods labeled sugar-free actually contain calorie-bearing sugars.
3. Fresh vegetables contain more vitamins than frozen vitamins.
4. When a muscular athlete stops exercising, much of his or her muscle tissue turns into fat.
5. A woman needs twice as many calories per day in late pregnancy as she did before she was pregnant.

- |             |              |
|-------------|--------------|
| <u>True</u> | <u>False</u> |
| <u>True</u> | <u>False</u> |
| <u>True</u> | <u>False</u> |
| <u>True</u> | <u>False</u> |
| <u>True</u> | <u>False</u> |

# NEWS, NOTICES AND EVENTS

## **BANK HOLIDAY OPENING HOURS**

- ♦ **May Day (May 1st): 7 a.m. - 12 p.m.**

## **COMMON ENTRANCE EXAMINATION 2011**

- ♦ **Good luck to all gym members, and the children of gym members, who will be sitting the Common Entrance Examination on Tuesday May 8th, 2012**

## **MR. & MS. BRIDGETOWN NOVICE BODYBUILDING, FITNESS & BODY FITNESS COMPETITION**

- ♦ **The Combermere School: May 12th, 2012, 6 pm**

## **PAST NEWSLETTER EDITIONS**

- ♦ **Past editions of J&S Academy's Health & Fitness Newsletter can be downloaded from the gym's website ([www.jandsacademy.com](http://www.jandsacademy.com)).**

## **CONTACT US**



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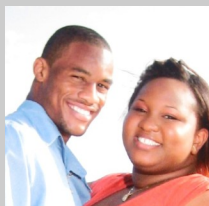
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## **WANTED...**

*Models for the next publication of the Health & Fitness Newsletter*

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## **Let Us Know What You Thought Of This Issue**

Read something that you disagreed with, that you did not understand or that was really helpful? Send your feedback to

[jamiljones@jandsacademy.com](mailto:jamiljones@jandsacademy.com)