



Section 9

Proper Body Weight Through Nutrition

Body Morphology

Ectomorph - The entire body is slender and sparsely built. The bone structure is small, subcutaneous fat is almost nonexistent and the muscles are small, flat and wirey. The joints of the body have loose ligaments and are often hyperextensible. Ranges of motion may be 15-30% greater than what is considered the normal ranges. The arms and legs are long and spindly. The neck is long, the Adam's apple prominent and the head is often carried forward creating the "military neck". The lateral spinal curves are often more dramatic with a lordotic lumbar curve coupled with a kyphotic thoracic curve. Scoliosis is more common in this body type. With exercise training they can develop a wirey strength that is surprising. As weight is the main determinant of oxygen utilization, their light frame can afford them good endurance.

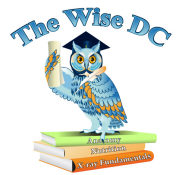
Endomorph - The entire body is heavy and can be obese without proper diet and exercise. The bone structure is heavy and the bones are dense. Subcutaneous fat is plentiful. There is considerable muscle bulk and the muscles are short. The joints of the body are large and the ligaments are tight and very thick and strong. The joints may not reach full extension. Range of motion may be 10-20% less than the "normal" found in the intermediate, mesomorph type.

The increased body mass demands greater oxygen consumption. The endomorph does well in "spurt" activity, or explosive efforts but is poorly suited for endurance.

The endomorph is strong and can be very powerful, even when appearing to be excessively obese.

Mesomorph - The mesomorph, also known as the intermediate type, is the classic example of form and anatomy. Generally, they are of "average" height, 5'7" to 5'10" and they have classic proportions, i.e., total arm span equal to body length, total trunk length is approximately equal to limb length and the Law of Thirds apply, i.e., the arm length is three times the length of the outstretched hand, the leg length is three times the length of the foot, and the height of the head is one third the length of the torso.

The mesomorph has good muscle development, body fat percentage is 13-22% depending on sex and age, and connective tissue is strong and durable.



Ectomorph Susceptibilities

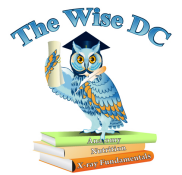
- Hyperextensive joints / Lax ligaments leading to misalignment or dislocation.
- Extra lumbar vertebra creating a weak, easily destabilized low back / poor posture.
- A higher incidence of developmental deformities such as tropism and scoliosis.
- Low blood pressure / Congestive heart condition.
- Scapular "winging" or Sprengles deformity.
- Susceptibility to upper respiratory tract infections, and lung congestion. This includes colds, flu, acute bronchitis, allergies and sinus problems.
- Depression / Anxiety / Neurotic behavior / Endocrine excesses.
- Slower healing with muscle or ligamentous injury necessitating longer rehab periods.

Endomorph Susceptibilities

- Myocardial infarction / Coronary vessel blockage / Myocardial degeneration / Arteriosclerosis.
- Emphysema.
- Osteoarthritis and DJD.
- High blood pressure / Diabetes / Gout.
- Liver, kidney, gall bladder dysfunction.
- Chronic low back pain / Obesity.
- Rapid healing for most structural injuries with good return of strength.

Dietary Recommendations According to Body Type

Body Type	Goals	Dietary Strategies
<u>Ectomorph</u> - tall, slender, high metabolism	Increase body weight, and lean body mass, decrease body fat.	Increase calorie intake by 350 - 400 Kcal per day / Eat larger portions / eat 5 to 7 times per day / Increase protein to 1.5 - 2 grams per kg body weight.
<u>Mesomorph</u> - naturally muscular, long torso, full chest	Increase body weight, and lean body mass, decrease body fat.	Consume 60% of calories from carbohydrates / 1 to 1.5 grams of protein per Kg of body weight / Keep fat intake around 30% of total calories.
<u>Endomorph</u> - stocky build, slower metabolism	Decrease body weight, increase lean body mass, decrease body fat.	Decrease calorie intake by 500 Kcal per day / Consume low fat high fiber foods / Eat smaller more frequent meals.



Obesity

Obesity is caused by multiple genetic and or environmental factors. Genetic causes may include hormonal imbalances or impaired metabolism causing an individual to store excessive body fat.

Environmental factors may include low levels of physical activity and the consumption of foods high in fat content. Recent studies suggest that over 40-50% of Americans are obese.