

Mark L. Vinick, D.C., C.A.S.

Doctor of Chiropractic
Clinical Ayurvedic Specialist (C.A.S.)
President, California Association of Ayurvedic Medicine
Board Certified, American Academy of Pain Management
Board Certified, American Board of Anti-Aging Health Practitioners
326 S. Pacific Coast Hwy., Suite 103 ~ Redondo Beach, CA 90277
(310) 543-1070 ~ Fax (310) 543-0402 ~ www.drmarkvinick.com

September 6, 2007

Mr. Alexander Elnekaveh, CEO
Aroa Marketing
12621 Encinitas Avenue
Sylmar, CA 91342

Re: Evaluation of Gravity Defyer Shoe and its advertising claims.

Dear Mr. Elnekaveh,

Thank you for allowing me the opportunity to evaluate the Gravity Defyer Shoe and its advertising claims. As a practicing Chiropractor for more than 20 years, I have successfully treated many individuals with foot and lower extremity problems. The following evaluation is based on my many years of experience in this field.

First, I'll describe some of the basic principles involving the biomechanics of normal gait, the walking cycle. The gait cycle is divided into two phases, the stance phase and the swing phase. The stance phase, which consists of 62% of the gait cycle, describes what happens to foot biomechanics during the weight bearing phase. The swing phase, which consists of 38% of the gait cycle, describes what happens to foot biomechanics during the non-weight bearing phase.

The stance phase (weight bearing phase), is further divided into three periods:

1. Contact- This is the initial heel contact, also called Heel Strike.
2. Midstance- This occurs when the weight shifts along the lateral side of the foot to full plantar contact.
3. Propulsion- This is the final phase of the cycle where the body weight shifts to the anterior part of the foot, and one springs off the large toe (Toe Off).

One of the advertising claims is that these shoes “ease joint pain and pressure on your spine”. Another claim states “Relieve your feet, ankles, knees, hips, and spine. Give your whole body a break from the pressures of your daily life”. These claims are completely substantiated by the following scientifically accepted facts:

There is an important inter-relationship between the feet and lower extremities to the pelvis and spine. This is referred to as a “closed kinetic chain”, and basically states that whatever stresses are placed on the foot during impact are simultaneously transferred

upward to the entire lower extremities, (the ankle, leg, knee, thigh, hip, and pelvis), and also throughout the full spine, head and entire musculoskeletal system, thus affecting the vertebral bodies, intervertebral discs, facet joints, their respective nociceptors (pain receptors), proprioceptors (position sense receptors), and the entire central and peripheral nervous systems, affecting the entire body.

Obviously, shoes are an important factor in the above described biomechanics and can result in limited joint movement, constricted circulation, and altered gait, affecting the entire kinetic chain. There are many factors in shoe development and design that determine how efficiently a particular shoe functions:

1. Size- This refers not only to the shoe length, but also refers to the proper accommodation of the first metatarsophalangeal joint (MTP), as it is the widest part of the shoe and the proper shoe must be designed to accommodate this, to allow for proper function of the MTP during weight bearing (referred to as “ball fit”).
2. Shape- Several factors combine to make up the overall shape, most important are:
 - a. Last-Most dress shoes are built around a straight last, and most athletic shoes have a “combination” last, which produces a slight inward curve of the forefoot.
 - b. Toe Box- This must be wide, high, and long enough to sufficiently allow adequate movement of the toes.
 - c. Vamp-This is the material over the instep, and must be sufficiently high to prevent pressure on the instep.
 - d. Heel counter-This supports the calcaneus, prevents shoe slipping and helps stabilize rear foot motion.
3. Support- The shank is the inner part of the shoe which extends anteriorly from the heel and prevents excessive pressure on the medial longitudinal arch.
4. Shock absorption-Studies have demonstrated that bare foot walking produces a force spike of 85-100% of body weight on the heel. Leather heeled shoes striking a hard surface or concrete actually increases this undesirable shock. Running increases this shock wave force 3.6 times. So a shoe with shock absorbing material will greatly minimize this effect. Springs built into the heel also would dramatically lessen this harmful effect.

The average individual takes between 5-10,000 steps every day, mostly on hard surfaces. Without proper support and protection, their entire musculoskeletal system is subjected to excessive stresses which hasten the aging process, producing early degenerative changes, and its resulting diminished mobility, range of motion, and fatigue.

In reviewing the advertising claims for the Gravity Defyer Shoes as displayed on www.skymall.com, it is my professional opinion that this shoe either meets or exceeds all of the criterion and claims stated in its advertising. Please feel free to contact me at the address above should you require further information.

Sincerely,
Dr Mark L. Vinick