LUPINE PUBLISHERS

Research and Reviews on Healthcare: Open Access Journal

DOI: 10.32474/RRHOAJ.2022.07.000272

ISSN: 2637-6679

Review Article

Female foot planter pressure problems in High heel Fashion footwear's A Special Review

Durairaj Dhanapal*, Siwala Mundia and S Nagaraj

Department of Leather Technology, Copperstone University, Kitwe Zambia

***Corresponding author:** Durairaj Dhanapal, Department of Leather Technology, Copperstone University, Kitwe Zambia

Received: July 13, 2022 **Published:** August 18, 2022

Abstract

High Heel and stiletto are very popular and fashionable among women especially in today, many women wear high heeled as a daily basis to increase the femininity and attractiveness, many these high heels remain popular despite the negative effects to the human foots. This review aimed to identify the dangerous effects of high heels and human stability problems and planter pressure distribution effects. But it always high heels is very dangerous for human foots. High heels not only cause chronic problems, but also leads to common complaints like leg and back pain. Other problems like planter facilities, hallus, valgus, bunion, hammer toe or ingrown nail toes, also very dangerous for human foots. The body center of the gravity shifted to forward when standing on high heels, the effect the appropriate standing posture as the body attempts to make a serious of adjustment. The high heel was not originally created as an accessory to wear with pencil skirts, in fact that according to ancient origin, the first heel is as depicted on a 9th century Persian bowl were created for male horse riders as away to stop their feet from slipping from stirrups. But high heels always cause major problems for female foot, high heels are main culprit in millions of foot and ankle complaints across the world, but women still wear the shoe with abandon. This review article discussed the below disadvantages and dangerous of high heels.

a) joint pain

b) Callouses

c) shortened Achilles tendon

d) lower back pain

e) Lack of cushion

f) falling and sprained ankles

g) ingrown toenails

Most of heels have pointy or almond shaped toes despite the fact that the end of human foot is actually squarer, and it is the biggest and littlest toes that take a lot of the pressure as they press against the sides and the end of the shoes. High heels cause human feet to side down and crush human toes leading to ingrown toenails. Ingrown toenails occur when the side of your toenails starts growing feet flesh and it can be serious and painful to the human foots. Planter pressure in not evenly distributed by our foot we meet lot heel pain and back pain and abnormal stability problems. This review article explained all disadvantages and dangerous problems about fashion high heels usage. Right now, pencil tip high heels are very famous but it very dangerous one for female foots and this article is very useful for prevention of foot problems.

Keywords: Planter Pressure; Pack pain; High Heeled-Shoes; Ingrown Toenails; Foot Stability; Joint Pain

Introduction

The body will take permanently take on characteristics of postures assumed for a long period of time. Any time the body spends extended time in an unnatural, poorly aligned position, key muscles become shortened and tight while others are lengthened and weakened. Since the body works as one functional unit these imbalances echo throughout the whole body [1]. When something is off somewhere in the system, the effects may be seen further along the chain of movement. This low back problems common among people with sedentary jobs or sedentary lifestyles in general. Another example is the knee problems runners and cyclists may experience due to weak gluts. In this review article we are focusing specifically on the foot, knee joint pain, and low back pain another problem is that women's shoes are not designed to fit the anatomy of their feet but rather the changing fashions of time. Men's shoes are designed to conform to the outer dimensions of the foot without causing it to compress or constrict. Women's typical high fashion shoes, on the other hand, do not conform to the dimension of the foot. They often have a triangular toe box that constricts the normal rectangular dimensions of the forefoot. Higher heels increase the pressure on the forefoot. How much pressure is put on the forefoot by high-heeled shoes? Compared with no heel, forefoot pressure increases by 22% for 3/4-inch heel, 57% for a 2-inch heel, and 76% for a 3 l/4-inch heel. Theses also very dangerous and give more harmful effect to the female human foot. The causes of most incidents of foot pain are poorly fitting shoes. High-heeled shoes are major culprits for aggravating, if not causing, problems in the toes, where the most pressure is exerted. Other conditions can also cause or exacerbate foot pain. Weather affects the feet; they contract in cold and expand in hot weather. Foot size can also increase by 5% over the day and change shape and size depending on whether a person is walking, sitting or standing. Improper walking due to poor posture or inherited or medical conditions that cause imbalance or poor circulation can contribute to foot pain. Often one leg is shorter than the other, causing an imbalance. High impact exercising, such as jogging or strenuous aerobics can injure the feet. Common injuries include corns, calluses, blisters, muscle cramps, acute knee and ankle injuries, plantar fasciitis, and metatarsalgia etc. When we walk around in high heels, human foot and ankle complex is forced into an unnaturally plantarflexed position for an extended period of time. Place our body in this position for a moment to understand why this would cause problems, the toes are pointed straight down, stretching out the muscles across the top of the foot and ankle, while the Achilles tendon and calf muscles are scrunched up much more tightly than they should be Compound the problem by adding the impact from walking plus time and we got a potential problem [2], In 2010 study published in the Journal of Experimental Biology found that among habitual high heel wearers, the calf muscles were shortened dramatically: up to 13% the Achilles tendon was also observed to be thicker, tougher, and less flexible than in non-high heel wearers. Calf muscles affected by high heels include the gastronomies (upper calf), soleus (lower calf), and peroneals (outside of calf). When these muscles become short and tight, they throw off the balance of our entire postural system. We are unable to stand comfortably in a neutral foot position. The shortened calf muscles cause the feet to become flat and externally rotated, losing their natural ability to hold an arch. This leads which can cause problems in the IT band among other areas. The feet are at risk of plantar fasciitis, a painful contraction of the sheet of connective tissue across the sole of the foot, as well as bone spurs and bunions.

Types of Foot Problems

Joint Pain

When wearing high heels, 70-80% our bodyweight is shifted forward, on to the top balls of our feets, when this happens the matatorsal (fore boot bones) drop and sorrowing ligaments weaken. The entire bore foot structure is collabse, in turn leading excess pressure and friction under the ball of the foot [3]. Thus, result is hot feet our feet consist of 26 bones, held together through a web of muscles and ligaments. The foot is not flat on the ground but is held up in the middle forming two arches: the Longitudinal arch (or instep) running along the foot from the heel to the toes and the Transverse arch which runs across the for Five metatarsal bones run from the middle of the foot to our toe joints. Over-probation means the Longitudinal arch collapses and the ankle joint rolls inwards [4], every time the foot lands on the ground. A common side-effect of over-probation is excess pressure on the metatarsals, which in turn leads to lowering (or collapsing) of the Transverse arch. The forefoot structure is severely weakened, causing pain in the ball of the foot.

Corn and Calluses Problems

Corns and calluses are hard, thickened areas of skin that form as a consequence of rubbing, friction or pressure on the skin Corns and calluses form on the feet and can make walking painful. Although corns and calluses are often talked about together, they are separate conditions. Corns generally occur on the tops and sides of the toes. A hard corn is a small patch of thickened, dead skin with a small plug of skin in the centre. A soft corn has a much thinner surface, appears whitish and rubbery, and usually occurs between the toes. Seed corns are clusters of tiny corns that can be very tender if they are on a weight-bearing part of the foot [5]. Seed corns tend to occur on the bottom of the feet, and some doctors believe this condition is caused by blocked sweat ducts. Calluses are hard and rough-feeling areas of skin that can develop on hands, feet or anywhere there is repeated friction even on a violinist's chin. Like corns, calluses have several variants. The common callus usually occurs when there has been a lot of rubbing against the hands or feet. A plantar callus is found on the bottom of the foot [6].

Shortened Archiles Tendons

Today lot of peoples are affected by back pain, now days more than 25 styles high heels available in markets, commonly women only facing these problems and many women affected by these types of problems in worldwide. Foot pressure is not activated

properly this type of issues is coming while wearing the high heeled fashion footwears. Lower back strain is caused by damage to the muscles and ligaments of the back. Learn about muscle anatomy and the symptoms of lower back strain. A herniated disc in the lumbar spine can put pressure on spinal nerve roots [7], causing pain in the lower back or legs. Some women complain of low back pain that they believe is due to wearing high heeled shoes, back pain it is common for high heels to exacerbate an already present spinal condition. Particularly in the patient who has arthritis or muscular strain, the increased stress and workload put on the spine after a long day of walking on high heel shoes will likely aggravate the pain. This pain in the back may also result from foot or leg fatigue that results from wearing these shoes and this can affect whole body mechanics. This review recommends that wearing shoes with good arch support and cushioning footwears for females.

Lack of Cushion

Womens wearing high heels today meet lot of heel pain due to poor cushioning, cushion support is very important for our foot arches, in case it is not uncomfortable definitely our human feet lot of pain and some other dangerous foot problems. In 1993, the American Orthopedic Foot and Eighty per cent of the women surveyed complained of foot pain and deformity. Some 88% of the women were wearing shoes that were about 1/2 inch too narrow for their feet [8]. Another problem is that women's shoes are not designed to fit the anatomy of their feet but rather the changing fashions of time. Men's shoes are designed to conform to the outer dimensions of the foot without causing it to compress or constrict. Women's typical, high fashion shoes, on the other hand, do not conform to the dimension of the foot. They often have a triangular toe box that constricts the normal rectangular dimensions of the forefoot. The foot is a complex structure of 26 bones and 33 joints layered with an intertwining web of 126 muscles, ligaments, and nerves. The average person spends four hours on their feet and takes between 8,000 and 10,000 steps each day. The feet are very small relative to the rest of the body, and the impact of every step exerts tremendous force upon them about 50% greater than the Ankle Society (AOFAS) evaluated 356 healthy women to determine their shoe wearing habits. Person's body weight. During an average day the feet support a combined force equivalent to several hundred tons. In addition to supporting weight, the foot acts as a shock absorber and as a lever to propel the leg forward, and it serves to balance and adjusts the body to uneven surfaces. Cushion and padding support is very must for human foot, in case arches meet lot of pain and stretching problems, the review recommended that the selection of footwear should be flat and more cushioning effect.it will reduce the heel pain and prevent the palanter pressure problems of the human foot.

Falling and Sprained Ankles Problems

We wear flats footwear our weight is spread evenly between the ball of our foot and the heel with little pressure on our ankle. Unfortunately heels cause such as imbalance between the heel and the ball that the ankle is forced to become the fulcrum for our entire body. The ankle is not built to take that kind of pressure, fall and twisted or sprained ankles. Footwear stability is very important, in high heels stability is not proper and sometimes high heel shoes are easily twisting [9], our body is not balanced suddenly, so we meet lot heel pain and injuries. Footwear design and fitting, stability is very important property in footwear making process. A sprain is an injury to the band which connects two or more bones to a joint. This band is called a ligament. A sprain is usually caused by the joint being forced suddenly outside its usual range of movement. Most sprains heal within a few weeks. A severe sprain may look and feel like a fracture, and it can be difficult for health professionals to tell the difference between the two. A fractures is a break in one of the bones which make up the ankle joint. These are the leg bones (the tibia and fibula) and the heel and forefoot bones (the calcaneus and talus). Depending upon the exact cause of the fracture, one or more bones may be involved. Fractures cause sudden pain and usually cause significant swelling. Stress fractures are smaller cracks in the bone which also cause intense pain but with less dramatic swelling. Ankle pain may also arise from existing conditions of the joint itself, such as arthritis or gout, which may be aggravated by movement, impact or strain. A sprain is an injury to a ligament Ligaments are strong band-like structures around joints, which attach bones together and give support to joints. A ligament can be injured, usually by being over-stretched during a sudden pull [10]. The ligaments at the side of the ankle are the ones most commonly sprained. A damaged ankle ligament causes inflammation, swelling, and bleeding around the affected joint. Moving of the joint is very painful due to poor instability high heels.

Ingrown Toe Nails Problems

These also very dangerous problems of our foot, most of high heels have a pointy or almond shaped toes, despite the fact that end of our foot is actually squarer, and it is the biggest and littlest toes that take a lof of pressure as they press against the sides and the end of the shoes. Now day's high heels crush our foot side and toes, it is leading to ingrown toe nails problems, and end of our foot are meet lot of painful and injuries. Improper toe shape footwear very dangerous to our foot. Ingrown toenails can occur in any toe but are most common in the big toes. They usually develop when tight fitting or narrow shoes put too much pressure on the toenail and force the nail to grow down into the flesh of the toe. Incorrect toenail trimming can also contribute to the risk of developing ingrown toenail fungal infections, injuries, abnormalities in the structure of the foot, and repeated pressure to the toenail from high impact aerobic exercise can also produce ingrown toenails. This review articles recommended that flat toe footwear only shoe for our human foot.

Result and Discussion About Female Foot Planter Pressure

Plantar fasciitis occurs from small tears and inflammation in the wide band of tendons and ligaments, the connective tissue

which stretches from the heel to the ball of the foot. This band much like the tensed string in a bow, forms the arch of the foot and helps to serve as a shock absorber for the body. The term plantar means the sole of the foot and fascia refers to any fibrous connective tissue in the body. Plantar fasciitis is usually a result of overuse from high impact exercise and sports and accounts for up to 9% of all running injuries. Because the condition often occurs in only one foot however, factors other than overuse may be responsible in some cases. Other causes of this injury include poorly fitting shoes or an uneven stride that causes an abnormal and stressful impact on the foot. Pain often occurs suddenly and mainly in the heel. The condition can be temporary or may become chronic if the problem is ignored. The plantar pressure systems available on the market or in research laboratories vary in sensor configuration to meet different application requirements. Typically, the configuration is one of three types: pressure distribution platforms, imaging technologies with sophisticated image processing software and in-shoe systems. In designing plantar pressure measurement devices, the key requirements are spatial resolution, sampling frequency accuracy sensitivity and calibration In-shoe foot plantar sensors have paved the way to better efficiency flexibility mobility and reduced cost measurement systems [11]. For the system to be mobile and wearable for monitoring activities of daily life, the system should be wireless with low power consumption. Wireless in shoe foot plantar measurement systems have potential application to data transfer communication systems, miniaturized biomedical sensors and other uses. The review critically examines the devices used in measuring systems, such as sensors, processing units and wireless transmitters, High heel footwear having more slipping and instability nature, so female foot pressure is not evenly distributed during walking. Our entire body weight is activated properly by our foot we cannot meet any up normal foot problems. Incase our weight is not uniformly applied on ground our foot bore part meet lot of pressure and pain due to uneven planter pressure. So, design and fitting, arch cushion support is very important of our human foot [12]. Right now, high heel having more than 25 styles and all high are more height heels, toe point also very short our matarsal joint is not property distribute the planter pressure we meet harmful heel pain and other foot problems. So, foot pressure should be even in our human foot, we cannot meet any foot up normal problems, like heel pain, ingrown toenail, back pains etc.

Every woman should evaluate their foot pressure in Foot F-scanner systems. It will easily evaluate their foot pressure; more than 500 kpa foot planter pressure is serious problems. Now day's high heels have sharper heel and pressure point in very higher than normal flat footwears. High heels having more almond toe shape and we wearing high heels our entire body weight is activated only in end of the toe area only, so our foot meet our pressure point and foot planter pressure is uneven in this critical situation our foot meet lot of injuries. Foot pressure is more our feet meet lot of heel pain, sprain twisting, toe nail pain etc. today many women long time wearing high heels for fashion purposes, but they don't about the foot planter pressure problems, this review only focus the abnormal planter pressure problems in high heels and recommended that optimum foot pressure flat footwears only. Our bone joint is easily worn, demage and get more pain and these problems, it is leading to foot surgery activities. In US many women every year meet lot of foot surgery due this factor [13]. Each and every step our whole body spent more energy for walking, so energy saving, and foot prevention is very important for females. Right now, sharp pencil tip high heel is very famous in markets, but it is very dangerous foot female foot, it is uncomfortable foot planter pressure moments, our bone joint is easily get more pain and lot of injuries, after some years many women affect the major foot problems. Heel cushion effect is uncomfortable in high heels our heels and foot arches get more pain and it leading to major surgery problems and ulcerations (Figure 1). Currently lot foot cushion insole is available such as PU viscoelastic, EVA, MCP, MGR, PU foam in socks etc. [14]. we will use this cushion in sock footwear our entire foot will be shaper and no side effects. Our biomechanical is very important for our whole life so, we select only light weight flat footwear only is better, this article suggested that foot prevention designed footwears for female (Figures 2 & 3).

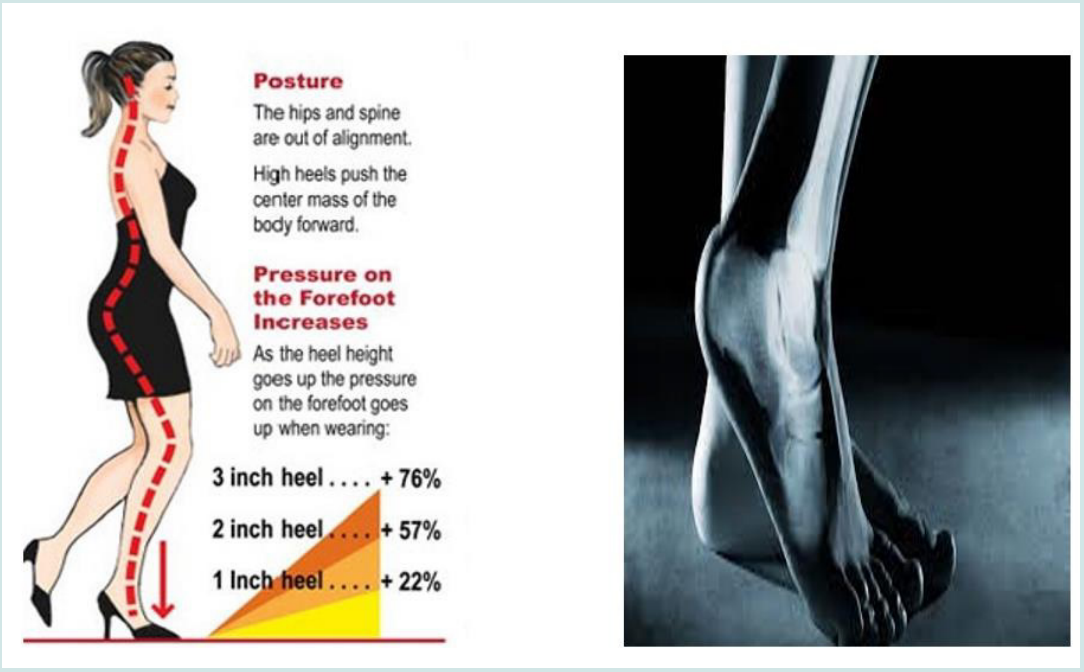

Figure 1: High Heel Shoe Body Poster.

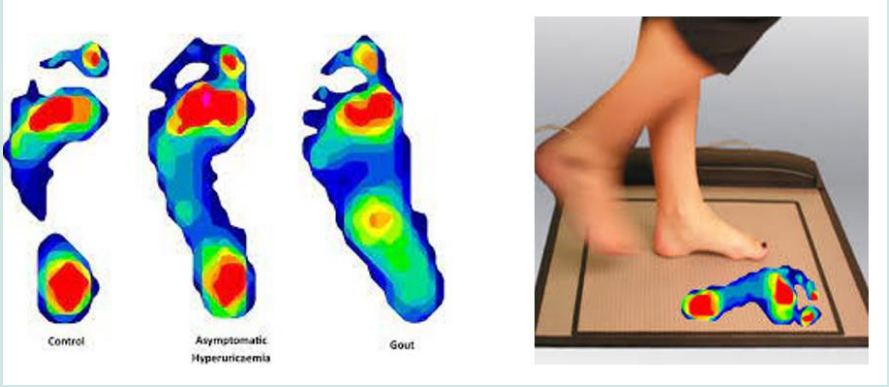

Figure 2: Flat Foot Pressure Distribution.

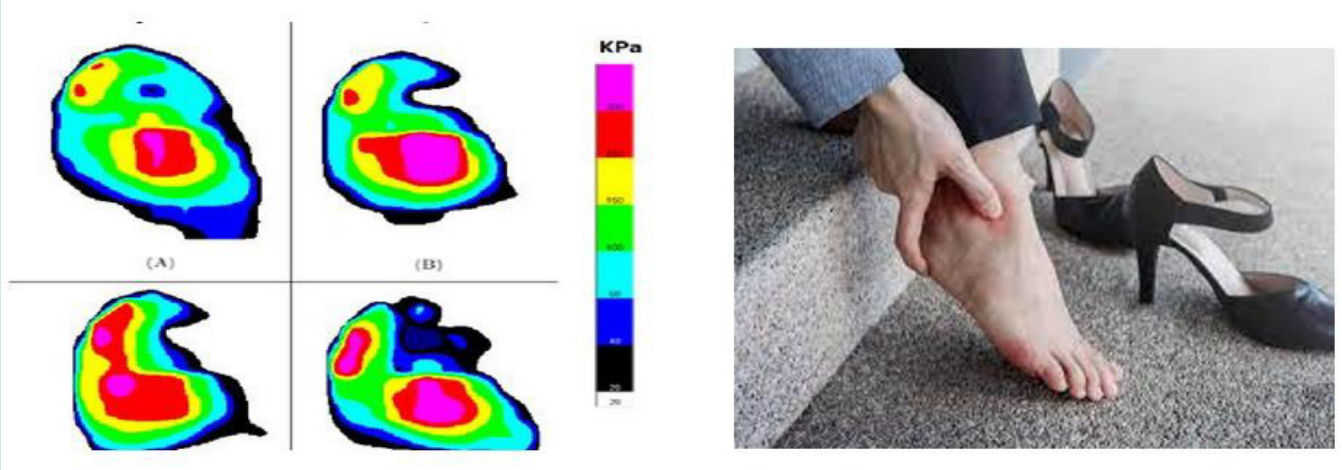

Figure 3: High heel Shoe Pressure Distribution.

Conclusion

In this review articles analysed high heel footwear common problems and foot planter pressure distribution issues for females. Wearing heels help to increase the height by 5-6 inches to the maximum. This is helpful for the women who love tall look. Most of the women like to feel attractive by having a tall look by wearing heels. Most of the women suffer from foot pain after walking with high heels [15]. Because of high heels the entire pressure of body is concentrated on the feet. If this happens for a longer time it can cause foot and even hip pain. Many women find it difficult to walk with high heels. Walking long distance with high heels proves to be painful. It often causes heel pain due to walking or standing on high heels for longer time. The way of walking may also look wired. Difficulty in walking may also increase chances of losing balance and falling while walking. Wearing heals causes entire pressure of body fall on the lower back. These Major cases of leg sprain in women are caused due to high heels. It may be caused if the person is not used to wearing high heels. Wearing heels regularly may cause serious leg and foot injuries in the future. Many of women are infatuated with high heels even if they are painful. It is a mentality of many women that high heels indicate higher status. However, status is worthless if old age is full of leg and back pain. Pressure falling on the lower back can cause back pain. However proper way of walking, exercise and yoga may help you avoid and get rid of such back pain. Additionally, some materials, such as leather or suede, provide more flexibility and will stretch and bend with the foot. Buying shoes made from these materials will take some of the pressure off the foot, negating the damage that higher heels cause in the foot's bones and tendons [16]. Padding the foot can alleviate a lot of the problems high heel shoes can cause. Right now, lot special cushion flat light weight footwear is available, it will better for human foot. This review article is very useful for prevention of foot problems to females.

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DOI: 10.32474/RRHOAJ.2022.07.000272