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**EVERYTHING CHANGES!™**

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## Research

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Foot Levelers, Inc. has withstood the test of time. Since the company's inception in 1952, tens of thousands of healthcare professionals around the world have provided well over a million of their patients with Foot Levelers' flexible, custom-made orthotics (spinal/pelvic stabilizers). Throughout the past half century, doctors have reported enormous numbers of successful clinical cases utilizing Foot Levelers' custom stabilizers. These cases have involved improving pedal and joint alignment, improving dynamic function, postural stability and balance, reducing shock stress to the body, and many other biomechanical conditions.

Now, over the past five years, several peer-reviewed research studies using Foot Levelers' custom orthotics and an independent survey of chiropractors and patients who wear Foot Levelers' custom orthotics have all confirmed what our thousands of advocates have been saying for nearly fifty years:

- Patients Love Foot Levelers' Orthotics
  1. Northwestern College of Chiropractic (NWCC). Summary of Market Research Findings: Surveys of Chiropractors and Patients. Bloomington, MN: NWCC, 1997.
- Foot Levelers' Orthotics Improve Structural Alignment
  2. Kuhn DR, Shibley NJ, Austin WM, Yochum TR. Radiographic evaluation of weight bearing orthotics and their effect on flexible pes planus. J Manip Physiol Ther 1999; 22(4):221-226.
  3. Kuhn DR, Cherry A, Golab M, Rodgers S. The effect on the quadriceps femoris angle with the insertion of an orthotic device. J Manip Physiol Ther (accepted for publication, date to be announced).
- Foot Levelers' Orthotics Improve Dynamic Function
  4. Stude DE, Brink DK. Effects of nine holes of simulated golf and orthotic intervention on balance and proprioception in experienced golfers. J Manip Physiol Ther 1997; 20:590-601.
  5. Stude D, Gullickson J. Effects of orthotic intervention and nine holes of simulated golf on gait in experienced golfers. J Manip Physiol Ther (accepted for publication, date to be announced).
- Foot Levelers' Orthotics Improve Athletic Performance
  6. Stude D, Gullickson J. Effects of orthotic intervention and nine holes of simulated golf on club-head velocity in experienced golfers. J Manip Physiol Ther 2000; 23(3):168-174.



**3 Out Of 4 Patients Would Recommend Foot Levelers Orthotics to a Friend**

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**Abstract**

**Objective:** To measure patient response to a new prescription of Foot Levelers custom-made orthotics, including physician's expected outcome, patient's accommodation, satisfaction, and willingness to recommend Foot Levelers.

**Methods:** Over a six-month period, 5000 chiropractic physicians were invited to complete a survey. The data were based on 897 returned surveys from physicians and 508 surveys from patients.

**Results:** While 25% of the physicians chose orthotics for their ability to absorb shock, 75% prescribed Foot Levelers to restore normal biomechanics. Almost one third of patients reported accommodating to their orthotics in one day or less. And after just one month of use, 82% of the patients reported their problems had been "completely," "mostly," or "somewhat" resolved with the help of Foot Levelers orthotics. Over three in four patients also said they would recommend that a friend ask his or her doctor about Foot Levelers orthotics.

**Discussion:** This was an independent study conducted by the Department of Research at Northwestern Health Sciences University, to maintain and improve product and service quality. The randomly selected chiropractic physicians were chosen for their use of custom-made orthotics by Foot Levelers.

**Conclusion:** The majority of responding chiropractic physicians and their patients find Foot Levelers products useful and effective. Most (87%) doctors of chiropractic prescribe Foot Levelers to correct pain, instability, misalignment, and to restore biomechanics in the back and to correct foot pronation. When asked if they would recommend that a friend ask his or her doctor about Foot Levelers, over 3 in 4 patients said "definitely" or "probably."



**Foot Levelers Orthotics Improve Pedal Alignment**

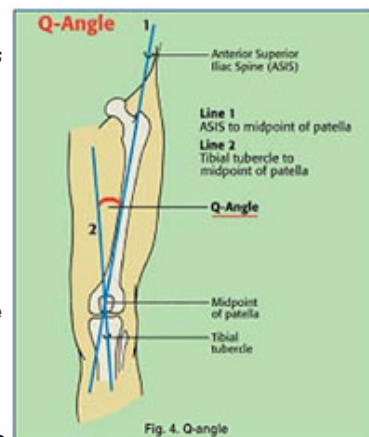
**Radiographic Evaluation of Weight-bearing Orthotics and Their Effect on Flexible Pes Planus**  
D. Robert Kuhn, DC, Nofa J. Shibley, DC, William M. Austin, DC, Terry R. Yochum, DC

**Abstract**

**Objective:** To determine whether any positive change in the alignment of the bones of the feet occur with the use of Foot Levelers custom-made flexible orthotics, cast by weight bearing, in individuals having flexible pes planus.

**Methods:** Anteroposterior and lateral radiographs were obtained with and without orthotics in place. The anteroposterior and lateral talocalcaneal angles and the lateral pitch of both the left and right foot were assessed.

**Results:** The radiographic measurements indicated statistically significant



improvements in weight-bearing foot alignment with the use of Foot Levelers orthotics.

**Discussion:** Biomechanical faults in the pedal foundation can adversely affect any of the joints and structures of the foot/ankle complex, lower extremities, pelvis, and spine.

**Conclusion:** This study supports the use of Foot Levelers custom-made flexible orthotics for the improvement of pedal structural alignment.



### Foot Levelers Orthotics Improve Balance and Proprioception

Effects of Nine Holes of Simulated Golf and Orthotic Intervention on Balance and Proprioception in Experienced Golfers David E. Stude, DC, Danielle K. Brink, DC

#### Abstract

**Objective:** To measure improvements in balance and proprioception, before and after nine holes of simulated golf, in experienced golfers, after wearing Foot Levelers custom-made orthotics continuously for six weeks.

**Methods:** Subjects were tested using the Cybex Functional Assessment System for Testing and Exercise. The tests challenged human performance skills beyond those required for golf, to provide the relative effects of orthotic intervention for all individuals. Foot Levelers orthotics were used for the investigation because of their abilities to control motion and absorb shock.

**Results:** Balance and proprioception before and after nine holes improved with orthotic use. More specifically, proprioceptive inequalities between left and right sides were not apparent after wearing the orthotics on a daily basis during the six-week period.

**Discussion:** Joint motion affects proprioception and it is well documented that disturbances in the proprioceptive feedback mechanism cause biomechanical disabilities. Lower-limb proprioception training in non-injured individuals can prevent many injuries.

**Conclusion:** Orthotics are made to address structural deficiencies, such as excessive pronation and arch integrity, and minimize differences in structural alignment. In a small population of experienced golfers, Foot Levelers' custom-made, flexible orthotics improved symmetrical balance ability and enhanced proprioception.



### Foot Levelers Orthotics Improve Gait, Reduce Fatigue

Effects of Orthotic Intervention and Nine Holes of Simulated Golf on Gait in Experienced Golfers David E. Stude, DC, Jeff Gullickson, DC

## Abstract

**Objective:** This investigation evaluated the effects of orthotic intervention on gait patterns and fatigue associated with nine holes of simulated golf.

**Methods:** Gait was assessed before and after nine holes of simulated golf, utilizing video freeze-frame analysis. Subjects wore Foot Levelers custom-made, flexible orthotics daily for six weeks and then gait was reassessed. Fatigue was introduced by having participants complete a nine-hole round of golf, before and after wearing Foot Levelers orthotics.

**Results:** Foot Levelers orthotics had a positive influence on stride length and pelvic rotation, components of gait, symmetry of gait movements, and reduced the effects of fatigue.

**Discussion:** The foot and ankle have considerable potential for influencing the function of areas above the lower extremity. Foot Levelers have already been shown to improve balance, proprioception, and osseous alignment, suggesting that foot function can influence whole-person activities.

**Conclusion:** After wearing Foot Levelers orthotics for a six-week period, test subjects demonstrated a 29-36% average increase in pelvic rotation, with similar changes in stride length. Orthotics also reduced the effects of fatigue.

## Current Research

A recently completed NYCC research review conducted by Kevin Ball, PhD and Margaret Afheldt, PT has been accepted for publication in an upcoming issue of the Journal of Manipulative and Physiological Therapeutics (JMPT). This review confirms that epidemiological studies provide strong support for the clinical advantages of orthotic use. Evidence is presented that desirable orthopedic effects are achieved by using Foot Levelers' custom-made, flexible orthotics designed from a simple weightbearing, foam impression casting technique.

Preliminary results from additional ongoing studies by Dr. Ball at NYCC's Gait Lab demonstrate that Foot Levelers' orthotics improve the dynamic biomechanical function of the foot/ankle complex, knee, hip, pelvis, and spine.



## Foot Levelers Orthotics Improve Dynamic Function

**Effects of Orthotic Intervention and Nine Holes of Simulated Golf on Club-Head Velocity in Experienced Golfers** David E. Stude, DC, Jeff Gullickson, DC

## Abstract

**Objective:** To evaluate the effects of orthotic intervention on club-head velocity (CHV) among a group of experienced golfers before and after 9 holes of simulated golf.

**Methods:** CHV was measured with a device used by many PGA and LPGA teaching professionals before and after completing 9 holes of simulated golf. Subjects wore Foot Levelers custom-made, flexible orthotics daily for 6 weeks and then were retested with same objective measurement parameters.

**Results:** There was a 3-5 mph increase (7%) in CHV after subjects had worn Foot

Levelers orthotics daily for 6 weeks. A 5-mph increase in CHV is equivalent to an increase in golf ball travel of 15 yards. In addition, the use of Foot Levelers orthotics eliminated the effects of fatigue associated with playing 9 holes of golf and therefore may improve the likelihood for more consistent golf performance.

**Discussion:** In golfers, the pedal foundation has the greatest effect on lower extremity biomechanics, and thus, overall performance. A stable base of support will help generate more acceleration in the downswing, thus increasing CHV and ball flight. Improved balance leads to more consistency in contacting the ball.

**Conclusion:** The use of Foot Levelers custom-fit, flexible orthotics in this study had a positive influence on increasing CHV and decreasing fatigue, both indicators of improved dynamic function.