

## Foot Flutter Lameness

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### Take Home Message

Identifying the insult causing "Foot Flutter Lameness" would greatly help diminish the time spent in diagnosing this often mysterious lameness. The incidence of foot flutter appears to be positively correlated with sole pressure due to improper shoe placement across the toe and sole of a horse's foot.

### Introduction

Foot flutter is a visible flutter or shaking motion in the hoof and lower limb of a horse as the toe of the hoof is leaving the ground. Several Veterinarians and Farriers (Armitage, 2005; Butler, 2002, 2005; Purves, 2005; Radcliffe, 2003; Spears, 2008) have observed and reported Foot Flutter Lameness associated with improperly placed horseshoes. There has been one suggestion put forth (Butler, 2002) that short shoeing with certain shoes (Natural Balance® Shoe *a* and/or Cytec® Shoes *b*) is the cause of the foot flutter, however, no detailed study appears to have been done. The suggestion put forth was not supported by this researcher due to the researchers own personal observations and experience of observing many horses shod short with many different

types of shoes. When eight horses with noted foot flutter were presented for lameness evaluations, the researcher sought out to devise an objective study that would test the cause of Foot Flutter Lameness. There were three primary objectives of this study. Firstly, to identify a form of lameness not experienced by many equine professionals. Secondly, to test the hypothesis that certain types of horseshoes (Natural Balance® Shoe *a* and/or Cytec® shoes *b* and/or Handmade Squared Toed Horseshoes *c*) were associated with or the cause of Foot Flutter Lameness. Thirdly, to test the hypothesis that the cause of foot flutter lameness is due to sole pressure from improper toe placement of certain types of horseshoes on very flat-footed horses (Natural Balance® Shoe *a* and/or Cytec® shoes *b* and/or Handmade Squared Toed Horseshoes *c*).

Disclaimer: By no means is this researcher placing blame on the horseshoes themselves, rather the improper application or placement of these shoes by the Farrier.

## **Materials and Methods**

Each of these eight cases presented were actual clinical cases brought to local veterinarian's clinics and the author for a lameness exam and consultation. After one case was presented, the author selected the next seven cases for research. All seven cases presented were adult horses with extremely flat feet. Three of the cases were thoroughbreds, two were warmbloods and two were quarter horses. Five horse were shod with Natural Balance® Shoes *a* and two were shod with Cytec® Shoes *b*. Sole depth was than measured by placing a stiff metal straight edge across the hoof, medially to laterally, at the apex of the frog. The distance down to the sole was measured and noted.

The Obel Lameness Grades (1-5) was used to assess lameness.

"Foot flutter" was scored as follows:

level 0 - no observable foot flutter.

level 1 - an observable foot flutter was slightly observed at the trot, but not observed at the walk .

level 2 - an observable foot flutter was observed at the trot and walk.

In shoeing and re-shoeing the case study horses; for consistency, the author performed all necessary farriery and used the same original driven nail holes in the hoof. Therefore, re-punching of horseshoe nail holes had to take place on some of the test shoes in order to accomplish this study.

All nails appeared to have been correctly placed and the nails tested negative to hoof tester response.

The following experiment procedure was followed:

- 1 -- grade the shod horse for lameness and foot flutter.
- 2 -- remove the study shoe and note the type of shoe used (Natural Balance® Shoe **a** or Cytec ®Shoe **b**). Measure sole depth.
- 3 -- grade the barefoot horse for lameness and foot flutter  
(this was done to observe if the study shoe was in any way associated with the lameness and/or foot flutter).
- 4 -- apply a variable shoe - a traditional fit, standard keg shoe, fit the same length in the heels as the study shoe (this was done to observe if shoe heel length was in any way associated with the lameness and/or foot flutter).
- 5 -- grade the shod horse for lameness and foot flutter.
- 6 -- remove the variable shoe and re-apply the study shoe  
(this was done again to re-test if the study shoe was in any way associated with the lameness and/or foot flutter).

- 7 -- grade the shod horse for lameness and foot flutter.
- 8 -- remove the study shoe, apply 1/4" plastic branch rim pads and re-apply the altered study shoe (this was done to relieve shoe sole contact and to test if sole pressure was in any way associated with the lameness and/or foot flutter).
- 9 -- grade the shod horse for lameness and foot flutter.
- 10 - remove the altered study shoe, remove the 1/4" plastic branch rim pads and re-apply the study shoe (this was done again to re-test the study shoe was in any way associated with the lameness and/or foot flutter).
- 11 - grade the shod horse for lameness and foot flutter
- 12 - remove the study shoe, heavily seat the toe of the shoe out and re-apply the altered study shoe (this was the final test to see if the study shoe was in any way associated with the lameness and/or foot flutter).
- 13 - grade the shod horse for lameness and foot flutter

## **Results**

**Case 1:** 14 year old, TB, with Natural Balance® Shoes,  
sole depth - 2 mm

step 1 - arrived as Obel 4, Level 2 foot flutter

step 3 - Obel 2, Level 0 foot flutter

step 5 - Obel 1.5, Level 0 foot flutter

step 7 - Obel 4, Level 2 foot flutter

step 9 - Obel 1.5, Level 0 foot flutter

step 11 - Obel 4, Level 2 foot flutter

step 13 - Obel 2, Level 0 foot flutter

**Case 2:** 12 year old, QH, with Cytec® Shoes,  
sole depth - 1.5 mm

step 1 - arrived as Obel 3.5, Level 2 foot flutter

step 3 - Obel 1.5, Level 0 foot flutter  
step 5 - Obel 1, Level 0 foot flutter  
step 7 - Obel 3.5, Level 2 foot flutter  
step 9 - Obel 1, Level 0 foot flutter  
step 11 - Obel 3, Level 2 foot flutter  
step 13 - Obel 1.5, Level 0 foot flutter

**Case 3:** 8 year old TB, with Natural Balance® Shoes,  
sole depth - 2.5 mm

step 1 - arrived as Obel 3, Level 2 foot flutter  
step 3 - Obel 1, Level 0 foot flutter  
step 5 - Obel 1, Level 0 foot flutter  
step 7 - Obel 3, Level 2 foot flutter  
step 9 - Obel 1, Level 0 foot flutter  
step 11 - Obel 3, Level 2 foot flutter  
step 13 - Obel 2, Level 0 foot flutter

**Case 4:** 11 year old, QH, with Cytec® Shoes,  
sole depth - 0 mm

step 1 - arrived as Obel 3.5, Level 2 foot flutter  
step 3 - Obel 3.5, Level 0 foot flutter  
step 5 - Obel 2, Level 0 foot flutter  
step 7 - Obel 3.5, Level 2 foot flutter  
step 9 - Obel 2, Level 0 foot flutter  
step 11 - Obel 3.5, Level 2 foot flutter  
step 13 - Obel 3, Level 0 foot flutter

**Case 5:** 9 year old TB, with Natural Balance® Shoes,  
sole depth - 0 mm

step 1 - Obel 4, Level 2 foot flutter

step 3 - Obel 4, Level 1 foot flutter  
step 5 - Obel 4, Level 0 foot flutter  
step 7 - Obel 4, Level 2 foot flutter  
step 9 - Obel 3.5, Level 0 foot flutter  
step 11 - Obel 4, Level 2 foot flutter  
step 13 - Obel 4, Level 0 foot flutter

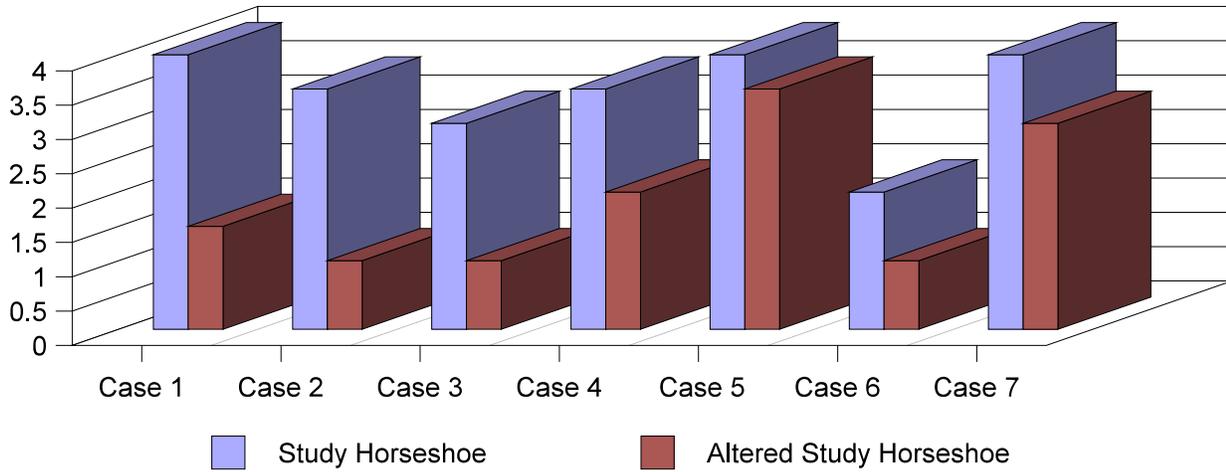
**Case 6:** 6 year old Warmblood, with Natural Balance® Shoes,  
sole depth - 1 mm

step 1 - Obel 2, Level 1 foot flutter  
step 3 - Obel 1, Level 0 foot flutter  
step 5 - Obel 1, Level 0 foot flutter  
step 7 - Obel 1.5, Level 1 foot flutter  
step 9 - Obel 1, Level 0 foot flutter  
step 11 - Obel 1.5, Level 1 foot flutter  
step 13 - Obel 1.5, Level 0 foot flutter

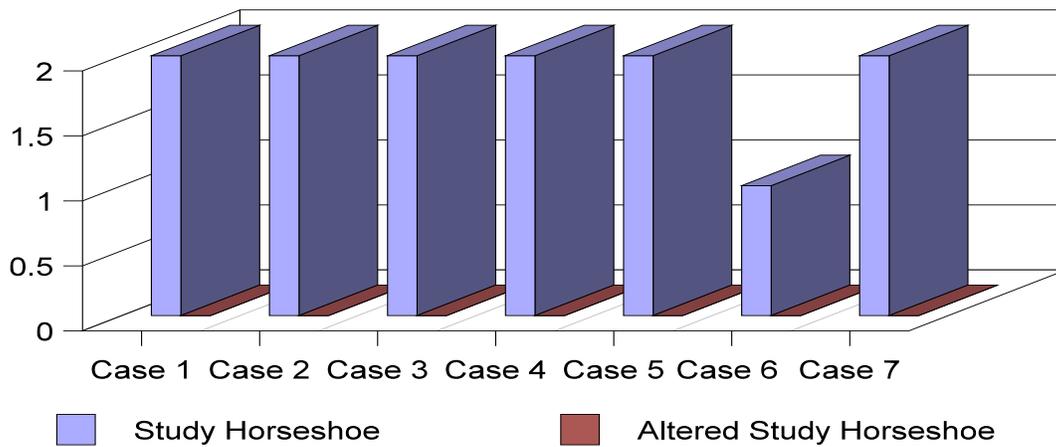
**Case 7:** 12 year old Warmblood, with Natural Balance® Shoes,  
sole depth - 1.5 mm

step 1 - Obel 4, Level 2 foot flutter  
step 3 - Obel 3, Level 1 foot flutter  
step 5 - Obel 4, Level 0 foot flutter  
step 7 - Obel 4, Level 2 foot flutter  
step 9 - Obel 3, Level 0 foot flutter  
step 11 - Obel 4, Level 2 foot flutter  
step 13 - Obel 4, Level 0 foot flutter

## Comparison of Obel Grade



## Comparison of Foot Flutter



Every case study's Foot Flutter Lameness was lessened or eliminated with the removal of the study shoe. Every case study's Foot Flutter Lameness was re-established with the re-application of the study shoes. Every case study's Foot Flutter Lameness was lessened or eliminated with the removal of sole pressure caused contact made by the study shoe. Every case study's Foot Flutter Lameness was re-established with the re-application of the sole contact by the study shoe.

The result clearly suggests that sole pressure caused by improper application of the Natural Balance® Shoes **a** and Cytec® Shoes **b** were found to be associated with or the cause of the foot flutter lameness. Future research would have to focus on what is the minimum sole depth needed in order to avoid "foot flutter Lameness by these shoes or any other type of shoe placed over the sole?"

## **Discussion**

The question that arises is how and by what reason does foot flutter happen? First, I draw attention to our Funny Bone. The Funny Bone, the common name we call the sensitive area at the back of the elbow, is not an actual bone, but rather a projection at the Elbow Joint of the Ulna. The projection is known as the Olecranon. The Ulnar Nerve passes through a groove in the Olecranon, and over the end of the Radius. Because only skin covers this area, the Ulnar Nerve has little protection (Microsoft Encarta Encyclopedia, 2004). As many of us know, a blow to this nerve or to the surrounding area produces sharp pain and sometimes tingling or numbness. After striking this area, to lessen the pain, a person very frequently shakes their hand/arm and/or opens and closes their hand. The same kind of feeling can be experienced from Nerve Entrapment due to sitting/sleeping in a position in which a nerve is pressed upon by surrounding tissue (Taber's Cyclopedic Medical Dictionary, 1989). Take a moment to draw from your own experiences after hitting your Funny Bone or having your arm/leg "fall asleep."

It is the premise of the researcher that the same sensation is occurring in the horse due to sole pressure from the improper toe placement of certain horseshoes (Natural Balance® Shoes **a** and Cytec® Shoes **b**) or any horseshoe improperly placed on a flat-footed horse. Upon weight bearing, the Circumflex Nerve becomes pinched between the sole and the normally descending Distal Phalanx due to the toe placement of these shoes used in the study (Natural Balance® Shoes **a** and Cytec® Shoes **b**) resting on the overly flat sole of a horse. The sharp pain causes the foot to flutter at the moment the toes leaves the ground, for the same reasons we shake our hand when we pinch our ulnar nerve or our hand “falls asleep.”

Through observation of several horses, this pinched sensation is made worse on a flat footed or thin soled horse. Foot Flutter Lameness doesn't appear to be prevalent in horses with these study shoes (Natural Balance® Shoes **a** and Cytec® Shoes **b**) on a horse with significant sole depth and/or when properly applied per directions.

Future research would have to focus on what is the minium sole depth needed in order to avoid Foot Flutter Lameness by improperly placed horseshoes, of any type.

The objective of this study was to identify that sole pressure can cause Foot Flutter Lameness. The result clearly suggests that sole pressure caused by the improper application of certain horseshoes (Natural Balance® Shoes **a** and Cytec® Shoes **b**) were found to be associated with and/or the cause of the Foot Flutter Lameness.

Disclaimer: By no means is this researcher placing blame on the shoes themselves, but rather the improper application and placement of these shoes.

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*Taber's Cyclopedic Medical Dictionary, 16<sup>th</sup> Edition.* FA Davis Company, Philadelphia, Pennsylvania, 1989;1196.

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**a** Natural Balance® Shoe. Equine Digit Support System, Inc, 506 St. Hwy 115, Penrose, CO, 81240.

**b** Cytek®. 1 Burrowhill Green, Chobham, Surrey, UK, GU24 8QP.

**C** Handmade Square Toed Shoe. Butler, PhD, CJF, FWCF, Doug. The Principle of Horseshoeing II, 1995;463.

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