NEUTRAL ORTHOTIC EFFECTIVENESS: OVERUSE INJURY PREVENTION FOR AN INTERCOLLEGIATE BASKETBALL TEAM

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CHAPTER I

INTRODUCTION

In varsity intercollegiate men's basketball, lower extremity overuse injuries are common. Apple (1988) detailed several maladies affecting basketball players, including ankle sprains, inflammatory conditions, and patellar tendonitis. This study examined the effectiveness of neutral orthotics in preventing overuse injuries to intercollegiate basketball players.

Recent literature points to the prevention or relief of chronic overuse injuries of the lower extremity through the use of neutral orthotics. A neutral orthotic device is a shoe insert used to maintain the foot close to the biomechanical neutral position in order to minimize stresses and increase biomechanical effectiveness (Beckman, 1980). The philosophy behind the use of an orthotic device is a decrease in pathologic motions by decreasing the need for motion (Vogelbach and Combs, 1987). These motions are decreased by building the ground up to the foot in its neutral position (Ramig et al., 1980).

Among the injuries discussed in the literature were ankle sprains, inflammatory conditions, and patellar tendonitis (Apple, 1988). Each of these injuries is common in athletes who play basketball. This study reviewed the literature regarding prevention and treatment of these injuries with neutral orthotics and observed these phenomena with a practical application.

Statement of the Problem

The problem of this study was to combine the recent literature regarding prevention and treatment of lower extremity overuse injuries with a practical application to compare the frequency of selected lower leg overuse injuries in two conditions, namely, prior to the use of neutral orthotics and following the use of neutral orthotics.

Importance of the Study

This study provided information as to the effectiveness of neutral orthotics in prevention of ankle sprains, shin splints, and patellar tendonitis. Orthotics have been shown to be effective in reducing discomfort associated with these injuries after they occur. It is important to ascertain whether these orthotics also help reduce occurrence of these injuries as a preventative measure.

Hypotheses

The following hypotheses will be tested at the .05 significance level:

1. There will be no difference between the 1988-89 injury report season (control group) and the 1989-90 injury report season (neutral orthotic group) in relation to partial or whole events missed due to ankle sprains.

2. There will be no difference between the 1988-89 injury report season (control group) and the 1989-90 injury report season (neutral orthotic group) in relation to partial or whole events missed due to shin splints.

3. There will be no difference between the 1988-89 injury report season (control group) and the 1989-90 injury report season (neutral orthotic group) in relation to partial or whole events missed due to patellar tendonitis.

Extent of the Study

Delimitations

Delimitations of the study were the following:

1. Only one varsity intercollegiate basketball team was used.

2. Only scholarship members of the Oklahoma State University men's basketball team were used.

3. Only medically and scholastically eligible athletes were used, as game performances were included.

4. The athletes wore orthotics in their court shoes for practices, scrimmages, and games.

5. Last year's 15 players were the pretest; this year there were 13 players, 9 of whom returned from last year and therefore were the posttest.

Limitations

Limitations of this study were the following:

1. Only one team was available; therefore, the groups were not randomly selected.

2. Player attrition, that is, graduation, transfers, and professional endeavors changed the roster from last year's pretest to this year's posttest.

3. The self-reports of pain by players which varied from one individual to another.

4. Subjectivity in a physician's diagnosis.

5. Differences in medications given to the various athletes.

6. Symptomatic treatment with ice, electrical stimulation, etc., which differed from athlete to athlete.

7. Actual injury incidence differences from year to year.

8. Only the three injuries (ankle sprains, shin splints, and patellar tendonitis) were studied. In particular, stress fractures were not included in the final results.

9. Inherent drawbacks to a one-group, pretest, posttest, quasi-experimental design (Cook and Campbell, 1979).

Assumptions

The following assumptions were made:

1. The players performed to the fullest of their abilities.

2. The players wore orthotics in their shoes for practices, scrimmages, and games.

3. Injuries were reported by the athletes promptly and were treated symptomatically and similarly team-wide.

Definition of Terms

The following are terms which were utilized in this study:

Neutral Orthotic. A device used to maintain the foot close to the position which allows minimal stresses on the supporting structures and increases biomechanical efficiency (Vogelbach and Combs, 1987).

Rearfoot. The portion of the foot constructed by the calcaneus and talus bones (Vogelbach and Combs, 1987).

Forefoot. The metatarsals and phalanges portion of the foot (Vogelbach and Combs, 1987).

Subtalar Joint. The articulation of talus and calcaneus bones (Riegger, 1988).

Forefoot Valgus. The eversion of the forefoot on the rearfoot, with the subtalar joint held in neutral (Root, Orien, and Weed, 1977).

Forefoot Varus. The inversion of the forefoot on the rearfoot, with the subtalar joint held in neutral (Root, Orien, and Weed, 1977).

Posting. Additional material, often in the shape of a wedge, added to the appropriate portion of the inferior aspect of the neutral orthotic to achieve balancing of the malaligned foot (Lockard, 1988).

Event. The practice, scrimmage, or game for Oklahoma State University men's basketball team.

Event Missed. Any time an athlete is unable to complete any portion of a scheduled practice, scrimmage, or game.

Tolerance. Any time an athlete is unable to complete an entire scheduled event, but is able to complete a portion of it, or certain drills in the event.

Foot Management, Inc. A custom-made orthotics and foot-related products company, located in Pittsville, Maryland.

CHAPTER II

REVIEW OF THE LITERATURE

According to the National Basketball Trainers Association (NBTA), 77% of 702 injuries during a given basketball season involve the foot, ankle, knee, or hip (Apple, 1986). A significant portion of these leg injuries are overuse-chronic problems related to the athlete's lower extremity biomechanics. The following is a review of the literature concerning the relation of ankle sprains, shin splints, and patellar tendonitis to lower extremity biomechanics.

Formerly, the foot was the last part of the body discussed in an anatomy course, often on the last day of class. Students were told that "the foot is like the hand," and were sent on their way (Craik and Oatis, 1988). However, when one walks and runs, the entire body weight is alternately supported by each leg and foot during the gait cycle (Rasch and Burke, 1973). With this importance noted and with the boom of America's fitness revolution, the study of the foot is now emphasized in school and in continuing education workshops.

The 26 bones of each foot, in addition to the tibia and fibula, are constructed so that they form a series of arches in the foot (Riegger, 1988). The navicular bone is the keystone of the longitudinal arch of the foot and is also at the junction between the two parts of the foot: the rearfoot and the forefoot. It is therefore the area of concern for pronation measurement in biomechanics studies.

Low arched feet, pes planus, valgus, pronated, and flat feet are all terms which have been used to describe this foot problem. For consistency, the pronated foot term will be used when describing the biomechanical fault of this study (Oatis, 1988).

Ankle Sprains

The most common mechanism of ankle sprains is plantarflexion, inversion, and rotation. The forefoot is the first structure not only to make ground contact, but also to sustain the stress that is associated with ankle sprain. Thus, the ligamentous structures (soft tissues and articulations in the forefoot) sustain trauma initially. The forces are then transferred to the subtalar joint and finally to the ankle. Therefore, to adequately prevent ankle, forefoot, and subtalar joint sprains, the control must begin at the midtarsal joint and include the subtalar joint and ankle (Brace, 1987). Theoretically, a sprain to the anterior talofibular ligament may be a factor causing excessive pronation. Control of the subtalar joint may then decrease ligamentous stress, resulting in decreased pain and improved function (Combs and Vogelbach, 1988).

In an inversion ankle sprain, ligamentous injuries can cause displacement of the talus within the joint due to damage to the lateral ligaments and soft tissue structures of the ankle and foot. Displacement of the talus leads to: abnormal foot positioning in weight bearing, continued pain, prolonged healing time, and reduced surface contact area. An orthotic allows for a normal joint contact area which will decrease the stress on the joint surfaces. Proper alignment of the joint with orthoses should allow the ligaments to heal in their normal length and not place excessive stresses on them during healing.

Vogelbach et al. (1988) cited seven studies concerning ankle sprain treatment protocols. None of these protocols has examined the use of neutral orthotics as a part of their treatment. Vogelbach et al. also showed that there was an increase in talar tilt in weight bearing with subjects who have a lateral ankle sprain. Their study demonstrated that an orthotic was able to reduce talar tilt. As Vogelbach et al. also saw clinically, when the orthotic was used as part of the treatment of ankle sprains, the athletes had a remarkable decrease in pain and an earlier return to painfree ambulation and sports activities.

Eyring and Murray (1964) measured the effect of joint position on the pressure of intra-articular effusion to the ankle and found that pressure was lowest in 15 degrees of plantarflexion and neutral subtalar position. They also related an increase in joint pressure to an increase in joint pain. Vogelbach et al. (1988) found that the orthotic provides additional support to the subtalar joint to hold it in neutral, as well as placing the ankle joint in a slight plantar flexed position. This was believed to be one reason for the dramatic decrease in pain.

Results of a study done by Combs and Vogelbach (1988) on acute ankle sprain showed an immediate reduction in ankle pain in 70% of the subjects while walking and 90% of the subjects while running when wearing an orthotic, compared to not wearing an orthotic.

Shin Splints

A shin splint is a frequently used term for the identification of leg pain localized about the tibia bone (DeLacerda, 1982). While there is no general agreement as to the exact pathophysiology of shin splints, small tears within the muscle and tears at the periosteal attachment have been suggested as possible pathological explanations (DeLacerda, 1980b).

Biomechanical analysis of the lower extremity has suggested that improper foot alignment is a significant factor in the etiology of shin splints (Lilletvedt, Kreighbaum, and Phillips, 1979). Foot pronation, as determined by the navicular differential, is a significant factor in the incidence of shin splints (DeLacerda, 1980b). The foot becomes more rigid as the navicular bone drops closer to the floor, increasing the need for muscular support on the medial aspect of the foot from the tibialis anterior.

Shin splint patients were given a manual muscle test to determine which isolated muscle action elicited the pain in DeLacerda's (1980a) study. The six extrinsic muscles tested were as follows: anterior tibialis, extensor hallucis longus, extensor digitorum longus, posterior tibialis, flexor hallucis, and flexor digitorum longus. The posterior tibialis and anterior tibialis muscles contract eccentrically as the foot becomes weight bearing, and with overuse, muscle inflammation results from excessive eccentric muscle contractions (DeLacerda, 1982).

The longitudinal arch was not an etiological factor in shin splints in DeLacerda's (1980a) study. However, when the forefoot is abducted, the height of the longitudinal arch appears to decrease, giving the impression that the arch is weak or fallen. The navicular tuberosity displacement did have a significant positive correlation with the incidence of shin splints (DeLacerda, 1980a).

A musculoskeletal analysis of the pronated foot suggests a mechanism for shin splints. Anatomically, two extrinsic muscles of the foot/ankle have insertions, either directly on or adjacent to the navicular bone. The anterior tibialis muscle originates from the upper two-thirds of the lateral surface of the tibia bone and inserts on the medial surface of the first cuneiform and the base of the first metatarsal bones. The cuneiform lies anterior to and articulates with the navicular bone. The posterior tibialis muscle originates from the lateral aspect of the posterior surface of the tibia. Insertion is on the navicular tuberosity, with fibrous expansions to the calcaneus, three cuneiforms, the cuboid, and the base of the second, third, and fourth metatarsal bones. Thus, the anterior tibialis and posterior tibialis muscles are involved with support of the medial aspect of the foot.

Manual muscle testing of isolated muscle action revealed that posterior tibialis action produced pain characteristic of shin splints in 48 of 81 cases and in 41 of 82 cases for anterior tibialis action. Muscle action protects the skeletal system by functioning as shock absorbers. Too much stress causes the muscle system to fatigue, resulting in lost efficiency for absorbing shock (DeLacerda, 1980a).

With a pronated foot, the medial border of the foot must absorb abnormal stress as the rearfoot moves from heel strike through midstance to thrust with the forefoot. Muscle actions of the anterior and posterior tibialis muscles are major factors in supporting the medial side of the foot. Therefore, as the medial aspect of the foot is stressed due to pronation, the tensile force exerted on the anterior and posterior tibialis muscles increases.

Patellar Tendonitis

In a study of foot-related knee problems in the long distance runner, Lutter (1980) found that 43% of 213 knee injuries were related to pronation. Of this number, more than one quarter of the runners had patello-femoral pain. Sports Research Review (1989) cited excessive pronation as its implication as a factor in "runner's knee." Beckett et al. (1988) related pronation to anterior cruciate ligament deficient knees. Cooper and Fair (1979) attributed a moderately pronated foot to pain in the area of the metatarsal heads, knees, hips, and low back. Obviously, the knee is easily affected by pronation of the feet.

Tiberio (1987) reported that abnormal pronation of the subtalar joint may be an important component of patellofemoral dysfunctions, especially in cases of excessive lateral pressure syndrom. James (1979) said that when internal tibial rotation is increased or prolonged with excessive pronation, more transverse rotation must be absorbed in the knee joint with subsequent disturbance of the normal tibio-femoral mechanics. Symptoms may include pain, effusion, clicking or grating, collapsing of the joint, medial joint line pain, and dysplasia of the vastus medialis.

Tiberio (1987) also cited malalignment due to structural deviations in the foot and lower leg. These "indirect" factors include tibial varum, external tibial torsion, and varus deformities of the forefoot and rearfoot. All of these deviations are likely to cause the subtalar joint to pronate more than normal.

Excessive subtalar joint pronation affects the tibiofemoral joint by compensatory action fo the femur to deal with the excessive pronation. This results in pathomechanics of the patellofemoral joint (Tiberio, 1987).

Summary

Chronic ankle sprains, shin splints, and patellar tendonitis are all affected by lower extremity biomechanics and orthotics. This review of the literature detailed the anatomical and kinesiological connections between these three injuries and pronation. Use of neutral orthotics in a preventative manner may reduce the occurrence of these injuries in the intercollegiate basketball player.

CHAPTER III

METHODS AND PROCEDURES

This chapter outlines the preliminary and operational methods and procedures of the study. In the text, the researcher and the men's basketball athletic trainer are the same person.

Preliminary Methods and Procedures

The following forms were used in this study:

1. Student Health Center Referral Slips. This form is used to allow an athlete to be cared for by the physician, laboratory personnel, and pharmacist at no charge. It is filled in at the discretion of the men's basketball athletic trainer only for athletic-related injuries or illnesses. The form is also used as the basis for Oklahoma State Sports Medicine computer data entry (Appendix A).

2. Daily Treatment Record. This chart is tabulated as the training room day progresses. It includes the athlete's name and injury and the treatment received (Appendix B).

3. Daily Injury Report. This form is filled in with each day's injuries and illnesses according to the head team physician and the men's basketball athletic trainer. This report is taken to the men's head basketball coach each day at 1:00 p.m. (Appendix C).

4. A subjective decision must be made as to the athlete's injury or illness by Dr. Donald Cooper, Oklahoma State University's head team physician. Dr. Cooper has been in Stillwater for 30 years, also serving

as director of Oklahoma State University's Health Services Center. He is regarded as one of the nation's foremost authorities on treatment of athletic injuries (Strauss, 1989). However, as with any individual decision, subjectivity enters into his diagnoses.

Operational Methods and Procedures

A negative cast or impression tray was made of each athlete's foot. These casts were done by the researcher/athletic trainer in the main athletic training room at Oklahoma State University, and each was done following a detailed biomechanical evaluation. Included in this evaluation was a history, a prone examination of the subtalar and midtarsal joints, a supine examination of the first ray, a standing evaluation, and a gait analysis, as outlined by Vogelbach and Combs (1987).

This information was used in determining the type of orthotic needed, the posting necessary, any leg length difference, and the severity of any existing lower extremity problems. An order form outlining the athlete's background and biographical information, along with the biomechanical evaluation results, were included with each cast (Appendix D). The negative casts were then sent via airmail to Foot Management, Inc. of Pittsville, Maryland, where trained orthotists made positive molds of the feet from the negative casts.

Each mold was biomechanically evaluated by an orthotist, and the results were compared to those found by the researcher. Questions or suggestions by either party were discussed. From this point, the construction of the actual orthotic device was done by Foot Management, Inc.

After the completed orthotics were returned to Stillwater, they were fitted to each athlete individually. Proper fit and comfort was essential for the athlete's compliance in wearing the orthotics. Any orthotics not fitting properly, according to the researcher/athletic trainer or the athlete, were returned to Foot Management, Inc. for revision or reconstruction.

Each athlete was instructed in the proper method of changing the orthotics from shoe to shoe. The athlete was requested and expected to wear the orthotics in his court shoes for all practices, scrimmages, and games. The orthotics were worn in Reebok brand basketball shoes for all conditioning sessions, scrimmages, practices, and games. The fit and maintenance of these shoes were done by the men's basketball manager.

Each practice or game was covered, on site, by the researcher/athletic trainer. He was available prior to practice for treatment and taping of injuries. Practices were observed so that any new injuries could be witnessed, quickly evaluated, and treated. The researcher/athletic trainer was also present after practices for injury treatment and possible referral to the head team physician. If the injury or complaint of pain in the athlete was not witnessed by the researcher/athletic trainer, the study relied on the injury self-reporting of the athlete. As discussed in the study limitations, the pain tolerance of each athlete caused this self-reporting to vary from athlete to athlete.

Initially, all injuries were referred to the Student Health Center and Dr. Donald Cooper for evaluation. The athlete was sent with a Student Health Center payment slip (Appendix A). At the Student Health Center the physical examination, laboratory tests, X-ray series, and pharmaceutical dispension were completed. Dr. Cooper reported the injury information to the men's basketball trainer for treatment.

Treatment of injuries was done symptomatically. Ice, electrical stimulation, cold whirlpool, ultrasound, and/or iontophoresis were used, depending upon the athlete's pain symptoms. Treatments were documented on the Daily Treatment Record Form (Appendix B). Treatment of injuries in the training room or diagnoses of illnesses by the team physician warranted reporting on the Daily Injury Report (Appendix C). This injury report was given to the men's head basketball coach daily.

The Oklahoma State University Institutional Review Board (IRB #AS-90-036) for Human Subjects Research approval was sought. Exempt status approval was granted on March 5, 1990.

The injury reports were the basis of comparison for the two years of the study. Days on the injury report, days of tolerance activity level, and days of no participation were totaled. At the end of the 1989-90 men's basketball season the data were compiled from the archives and were entered into Oklahoma State University's IBM mainframe computer. Data were analyzed using SPSS^{X} computer programs.

Research Design and Statistical Analysis

The research design for this study was a one-group, pretest/posttest, quasi-experimental design (Cook and Campbell, 1979). Comparisons were made between the 1988-89 Oklahoma State University basketball team as a control group and the 1989-90 Oklahoma State University basketball team as a neutral orthotic group. Pretest and posttest means were analyzed using a correlated t-test. The .05 significance level was used for all statistical tests.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter outlines the results obtained from the statistical analysis of the data concerning orthotic use. The neutral orthotic effectiveness in reducing lower extremity biomechanical injuries is important in the field of sports medicine. As these injuries dominate a large percentage of the overall basketball injury picture, their prevention would help keep the athletes on the court longer.

The purpose of the study was to compare injury reports regarding ankle sprains, shin splints, and patellar tendonitis over a two-year period. Pretest (1988-89) and posttest (1989-90) data were gathered from the injury reports of the Oklahoma State University men's basketball team.

Results

Pretest data used from the control group showed the frequency of injury report days, tolerance days, and no participation days for the nine athletes. Posttest data, with the use of neutral orthotics, reflected the new frequency for the same injuries.

The data were collected from the Daily Injury Report Form (Appendix C) for the two seasons. Gleaned from these sheets were total days or the injury reports for the three injuries studied, days at tolerance level of activity, and days of no participation in the event. All three sets of days missed were compared over the two years for each of the injuries: ankle sprains, shin splints, and patellar tendonitis (Table I).

TABLE I

MEANS, STANDARD DEVIATIONS, AND t-VALUES FOR NINE SUBJECTS

Variable	Mean	±	Std. Dev.	t-Value*
Ankle Sprains				
Injury Report				
Pretest**	4.8	±	6.30	
Posttest	4.3	±	3.94	0.16
Tolerance				
Pretest	4.3	±	5.68	
Posttest	4.1	±	3.48	0.09
No Participation				
Pretest	0.4	±	0.73	
Posttest	0.2	±	0.67	0.80
Shin Splints				
Injury Report				
Pretest	1.1	±	2.42	
Posttest	2.2	±	3.93	-1.19
Tolerance				
Pretest	1.1	±	2.42	
Posttest	2.2	±	3.93	-1.19
No Participation				
Pretest	0.0			
Posttest	0.0			
Patellar Tendonitis				
Injury Report				
Pretest	1.1	±	2.42	
Posttest	2.1	±	4.26	-1.50
Tolerance				
Pretest	1.0	±	2.12	
Posttest	2.1	±	4.26	-1.51
No Participation				
Pretest	0.1	±	0.33	
Posttest	0.0	±	0.00	1.00

*t=2.31 (df = 8) for significance at .05 level.

**Pretest group, 1988-89; posttest group, 1989-90.

As can be seen in Table I, a correlated t-test was calculated for the nine subjects in each group. The .05 level of significance was used for decicion making and none of the mean comparisons were statistically significant. Because of the restricted degrees of freedom and possible violation of parametric statistical assumptions, the Wilcoxon Matched-Pairs nonparametric test was performed. The results were identical to the parametric analysis. Therefore, the hypotheses were not rejected for any of the dependent variables.

Discussion

As was presented earlier, ankle sprains (Combs and Vogelbach, 1988), shin splints (DeLarcerda, 1980a), and patellar tendonitis (Tiberio, 1987) have all been related to biomechanics of the lower extremity. These injuries are associated with pronation of the subtalar joint of the foot/ankle complex. The pain occurring with these injuries has been shown (Vogelbach and Combs, 1987) to be relieved by the use of neutral orthotics, which control subtalar joint motion.

Although this study had a small subject sample and was conducted over only two years, the researcher/athletic trainer observed the athletes grow confident using the orthotics. Clinically, they seemed to help relieve the injured athletes' discomfort across a wide variety of injuries.

The statistical analysis did not reinforce what the researcher saw clinically. This may be due to the relatively short duration of the study, the small subject population, the subjectivity of the athletes' pain threshold, and the unpredictable occurrence of the injuries themselves. Any of these could have contributed to a lack of precision in the ability to determine the effectiveness of the neutral orthotics in a field-based research setting.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This project was designed with the intent to examine neutral orthotic effectiveness in preventing or reducing the occurrence of ankle sprains, shin splints, and patellar tendonitis injuries. The subjects were the 1988-89 and the 1989-90 Oklahoma State University men's basketball team members. The athletes in the study participated in the 1988-89 season as a control group without orthotics. The 1989-90 season saw the same nine athletes participate with neutral orthotics in their court shoes. The literature pointed to a correlation between the use of orthotics and the reduction of discomfort and biomechanical malfunction associated with these injuries. Days on the Daily Injury Report, days of tolerance activity, and days of no participation were analyzed for each athlete for each of the three injuries. They were compared over the two-year, pretest, posttest course.

Findings

Two years of data for the Oklahoma State University men's basketball team were compared. Specifically, information about ankle sprains, shin splints, and patellar tendonitis was used. Correlated t-tests at the .05 level of significance were used to analyze the data.

Based on this study, the following findings are presented:

1. There was no difference between the 1988-89 injury report season (control group) and the 1989-90 injury report season (neutral orthotic group) in relation to partial or whole events missed due to ankle sprains.

2. There was no difference between the 1988-89 injury report season (control group) and the 1989-90 injury report season (neutral orthotic group) in relation to partial or whole events missed due to shin splints.

3. There was no difference between the 1988-89 injury report season (control group) and the 1989-90 injury report season (neutral orthotic group) in relation to partial or whole events missed due to patellar tendonitis.

Conclusions

Within the limits of this study, the following conclusions were drawn:

1. The prevalence and severity of ankle sprains, shin splints, and patellar tendonitis were not markedly affected by the use of neutral orthotics in relation to days missed or partial days missed from events.

2. Clinically, however, the athletes were observed to have been confident and comfortable with their orthotics in relation to these three injuries.

Recommendations

The following recommendations for further research can be made as a result of this study:

1. There should be another study done, with a larger subject group, in order to increase the precision of the means comparison.

2. The study should be continued over a longer period of time to allow more archival data retrieval.

3. More archival data concerning the three injuries should be utilized as a baseline for further research regarding the effectiveness of neutral orthotics in athletics.

4. This study should be repeated in a more experimental setting with volunteer recreational athletes who may be utilized in a more classical, random study.

5. This study should be repeated with emphasis on determining the suitability of orthotics for certain injuries. The study should discuss the severity of particular injuries in relation to the use of orthotics.

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APPENDIXES

APPENDIX A

STUDENT HEALTH CENTER REFERRAL SLIP

OKLAHOMA STATE UNIVERSITY

ATHLETIC TRAINER

STILLWATER, OKLAHOMA

405/624-5837 · Mornings
405/624-7416 · Main Training Room
405/624-7646 · Fieldhouse
405/624-6652 · Track
405/624-6008 · Baseball

Date ______________________ 19_____

NAME ____

____

____

REASON FOR VISIT

____

TRAINER

12107

APPENDIX B

DAILY TREATMENT RECORD

DATE________________

SPORT NUMBER	NAME	INJURY SITE	INJURY	TREATMENT & CURRENT CONDITION	TRAINER

APPENDIX C

DAILY INJURY REPORT

OKLAHOMA STATE BASKETBALL - DAILY INJURY REPORT

DATE ______________ PRACTICE # ______________

NAME	ANATOMICAL SITE	INJURY/ILLNESS	TREATMENT/PARTICIPATION STATUS

APPENDIX D

ORTHOTIC ORDER FORM

FOOT MANAGEMENT'S **QUICK FORM**

SHIPPING ADDRESS:
Foot Management, Inc. Salisbury, MD 21801
P O. Box 2015 301-742-4800
912 Eastern Shore Drive 1-800-HOT-FOOT

Accounts # ______

Accounts Name ______

Doctor s Name ______

Street Address ______

______

City ______

State ______ Zip ______

Patient Name ______

Age ______ Weight ______ Sex ______

Occupation ______

Prescriber ______

Prescriber Phone ______

DIAGNOSIS ______

TYPE OF SHOE ☐ ATHLETIC ☐ STREET ☐ EXTRA-DEPTH SHOE SIZE Length ____ Width ____

ADDITIONAL INFORMATION

1 TYPE OF ORTHOTIC

SPORT

- ☐ ORTHO-ARCH™ Semi-Rigid
- ☐ FM-Ultrathin™
- ☐ Red/White/Blue Rigid
- ☐ Shocker™– Geriatric
- ☐ Turf Toe™

STREET

- ☐ ORTHO-ARCH™-Semi-Rigid
- ☐ Soft (Extra Depth)
- ☐ FM-Ultrathin™
- ☐ Rigid
- ☐ Toe Filler

2 LENGTH OF ORTHOTIC

Check One
- ☐ FULL LENGTH
- ☐ TO TOE CREST
- ☐ TO MET HEADS

3 WIDTH OF ORTHOTIC

☐ Narrow ☐ Wide

4 ACCOMMODATIONS EXTENSIONS

☐ Mortons extension
☐ Right ☐ Left

☐ Metatarsal raise
☐ Low ☐ Medium ☐ High

☐ Metatarsal Cut Outs
☐ Right ☐ Left

☐ Heel spur
☐ Right ☐ Left

☐ Heel raise
☐ Right ____ ☐ Left ____

☐ Heel cup
☐ Shallow ☐ Deep

CLIPS
Medial ____ Lateral ____

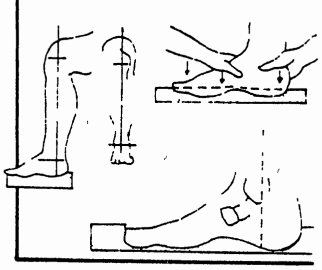
WEDGES
Medial ____ Lateral ____

5 CASTING Instructions

PLASTER
Dr. Measurements

	RIGHT	LEFT
RF	___ °Varus ☐	___ °Varus ☐
RF	___ Valgus ☐	___ Valgus ☐
FF	___ °Varus ☐	___ °Varus ☐
FF	___ Valgus ☐	___ Valgus ☐

FOAM
Feet must be pressed to Bottom of tray



VITA

Michael Sean Huffman

Candidate for the Degree of

Master of Science

Thesis: NEUTRAL ORTHOTIC EFFECTIVENESS: OVERUSE INJURY PREVENTION FOR AN INTERCOLLEGIATE BASKETBALL TEAM

Major Field: Health, Physical Education and Recreation

Biographical:

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Education: Graduated from Bloom-Carroll High School, Carroll, Ohio, May, 1983; received Bachelor of Science degree in Allied Medical Professions (Physical Therapy) from The Ohio State University in June, 1987; completed requirements for the Master of Science degree at Oklahoma State University in May, 1990.

Professional Experience: Student Athletic Trainer, The Ohio State University, 1983-87; Physical Therapist, Morgantown Physical Therapy Associates, 1987-88; Graduate Assistant Athletic Trainer, Oklahoma State University, 1988-present; Adjunct Instructor and Head Basketball Trainer, Oklahoma State University, 1988-present.

Professional Organizations and Certifications: Certified Athletic Trainer, 1988; Certified Member, National Athletic Trainers Association, 1988; Certified Member, Oklahoma Athletic Trainers Association, 1988; Licensed Physical Therapist, 1987; Licensed Physical Therapist, American Physical Therapy Association; Licensed Physical Therapist, State of Ohio, 1987; Licensed Physical Therapist, West Virginia Board of Physical Therapy, 1987; Licensed Physical Therapist, Oklahoma State Board of medical Licensure and Supervision, 1988.