

الآلية

بسم الله الرحمن الرحيم

قال تعالى : (و عَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى
الْمَلَائِكَةِ فَقَالُوا أَنْبِئُنَا بِأَسْمَاءِ هَؤُلَاءِ إِنْ كُنْتُمْ صَادِقِينَ)

صدق الله العظيم
سورة البقرة آية رقم (31)

Dedication

*To my father ...
The candle light that
Shows me the road
..... to my mother...
The warmest asylum
That I resort to for
Support
To my sisters and brothers
My eyes through which
....I vise the world ...
To my husband and daughters
The sweetest garden of being
...To them all...
I dedicate this humble
Work*

Acknowledgement

Thanks and deep gratitude should be convey to Almighty Allah
Who gave the strength and power to complete this effort.

Great indebtedness and deep appreciation should be reflected to
Dr. Hago ElFadil Haroun my supervisor who helped me a lot
through his guidance and precious advices without which this
effort will not see the light .

My thanks are extended to the staff of hospitals and students in
universities and institutes in Khartoum state about their fruitful
cooperation and support.

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lend a hand to make this work possible

List of Figures

Figure	page
Figure 1-1: shows Chappal or open type footwear	
Figure 1-2: shows Sandal or strap attached footwear	
Figure 1-2: shows Boot and shoe or closed type footwear	
Figure 2-1: shoe style of men`s derby – design 1	
Figure2-2: shoe style of men`s derby – design 2	
Figure2-3: shoe style of men`s derby – design 3	
Figure2-4: shoe style of men`s monk derby – design 4	
Figure2-5: shoe style of men`s apron derby – design 5	
Figure2-6: shoe style of women`s derby – design 6	
Figure 2-7: shoe style of men`s oxford	
Figure2-8: shoe style of women`s oxford	
Figure2-9: shoe style of women`s sandal	
Figure2-10: shoe style of ladies court shoe	
Figure2-11: shoe style of men`s pantafola	
Figure2-12: shoe style of men`s ankle boot	
Figure2-13: shoe style of bootee	
Figure2-14: shoe style of men`s moccasin	
Figure2-15: shoe style of ball shoe	
Figure2-16: shoe style of ballet shoe	
Figure2-17: shoe style of chuplee	
Figure2-18: shoe style of causal shoe	
Figure 2-19: shoe style of Ghillie shoe	
Figure 2 -20: shoe style of Gore shoe	
Figure 2-21: shoe style of Gore shoe	
Figure 2-22: shoe style of Gore shoe	
Figure 2-23: shoe style of Gore shoe	
Figure 2-24: shoe style of Gore shoe	

Figure 2-25: shoe style of Gore shoe

Figure2-26: the various uppers parts of the shoe

Figure2-27: the vamps positioning in the shoe

Figure2-28: the various styles of Tongues and Tabs

Figure2-29: Apron and vamp wings

Figure2-30: Toecaps and Wing caps

Figure2-31: Quarters

Figure2-32: Counters

Figure2-33: the various styles of Saddles and Bars

Figure2-34: Mudguards

Figure2-35: Back Strap

Figure2-36: mule shoe

Figure2-37: Counter linings

Figure2-38: blended insole

Figure2-39: welt, middle sole and sole

Figure2-40: the various styles of Heels

Figure2-41: Illustration of foot bones and joints

Figure2-42: Illustration of foot muscles

Figure2-43: Foot and toe movement

Figure2-44: shows three weight-bearing points in the foot

Figure2-45: shows the five stages of human foot during propulsion

Figure2-46: shows change of human foot due to movement

Figure2-47: shows Hallux valgus condition

Figure 2-48: shows Hammer toe condition

Figure2-49: shows clawed toe condition

Figure 2-50: shows Mallet toe condition

Figure 2-51: shows conditions of Metatarsalgia

Figure 2-52: shows the conventional foot measurements

Figure 2-53: Insole length = foot length + fitting allowance

Figure 2-54: FotoScan creates a full colour 3D image of the foot as well as accurate CAD data

Figure 5-1: shows the comparison between work and land topography

Figure 5-2: shows the comparison between diet and land topography

Figure 5-3: shows the comparison between diet and human work

Figure 5-4: shows the comparison between human work and genetic factor

Figure 5-5: shows the comparison between land topography and genetic factor

Figure 5-6: shows the comparison between diet and genetic factor

Figure 5-7: shows the comparison between Foot length and joint girth

Figure 5-8: shows the comparison between Foot length and waist girth

Figure 5-9: shows the comparison between Foot length and instep girth

Figure 5-10: shows the comparison between Foot length and long heel girth

Figure 5-11: shows the comparison between Foot length and short heel girth

Figure 5-12: shows the comparison between Foot length and ankle girth

Figure 5-13: shows the comparison between Foot length and joint girth

Figure 5-14: shows the comparison between Foot length and waist girth

Figure 5-15: shows the comparison between Foot length and instep girth

Figure 5-16: shows the comparison between Foot length and long heel girth

Figure 5-17: shows the comparison between Foot length and short heel girth

Figure 5-18: shows the comparison between Foot length and long ankle girth

Figure 5-19: shows the comparison between Foot length and long joint girth

Figure 5-20: shows the comparison between Foot length and waist girth

Figure 5-21: shows the comparison between Foot length and instep girth

Figure 5-22: shows the comparison between Foot length and long heel girth

Figure 5-23: shows the comparison between Foot length and short heel girth

Figure 5-24: shows the comparison between Foot length and ankle girth

Figure 5-25: shows the average foot measurements for female groups

Figure 5-26: shows the comparison between Foot length and joint girth

Figure 5-27: shows the comparison between Foot length and waist girth

Figure 5-28: shows the comparison between Foot length and instep girth

Figure 5-29: shows the comparison between Foot length and long heel girth

Figure 5-30: shows the comparison between Foot length and short heel girth

Figure 5-31: shows the comparison between Foot length and ankle girth

Figure 5-32: shows the comparison between Foot length and joint girth

Figure 5-33: shows the comparison between Foot length and waist girth

Figure 5-34: shows the comparison between Foot length and instep girth

Figure 5-35: shows the comparison between Foot length and long heel girth

Figure 5-36: shows the comparison between Foot length and short heel girth

Figure 5-37: shows the comparison between Foot length and ankle girth

Figure 5-38: shows the comparison between Foot length and joint girth

Figure 5- 40: shows the comparison between Foot length and waist girth

Figure 5- 41: shows the comparison between Foot length and instep girth

Figure 5- 42: shows the comparison between Foot length and long heel girth

Figure 5- 43: shows the comparison between Foot length and short heel girth

Figure 5- 44: shows the comparison between Foot length and ankle girth

Figure 5- 44: Shows the average foot measurements for male groups

List of Tables

Table	page
– Table 2-1: the standard sizes according to British size system	
– Table 2-2: the "O" sizes according to American size system	
– Table 2-3: the standard sizes according to French or Continental size [Paris Point] size system	
– Table 4-1: the questionnaire results of section one	
– Table 4-2: the questionnaire results of section two	
– Table 4-3: the results of group 1 of female individuals	
– Table 4-4: the results of group 2 of female individuals	
– Table 4-5: the results of group 3 of female individuals	
– Table 4-6: the results of group 1 of male individuals	
– Table 4-7: the results of group 2 of male individuals	
– Table 4-8: the results of group 3 of male individuals	
– Table 5-1: the statistical results for the foot length and width of group1	
– Table 5-2: the statistical results for the foot length and width of group2	
– Table 5-3: the statistical results for the foot length and width of group3	
– Table 5-4 : the average foot measurements for female groups	
– Table 5-5: the statistical results for the foot length and width of group4	
– Table 5-6: the statistical results for the foot length and width of group5	
– Table 5-7: the statistical results for the foot length and width of group6	
– Table 5-8: the average foot measurements for male groups	

Contents

<i>Subject</i>	<i>page</i>
----------------------	-------------

- verse
- Dedication
- Acknowledge.....
- List of figures.....
- List of Tables
- Contents
- Abstract.....
- Arabic abstract.....

Chapter One: Introduction

- Introduction:
- 1.1 Historical Background:
- 1.2 Shoe and its function:
- 1.3 Objectives:

Chapter Two: Literature Review

- **2.1** Shoe Styles and Parts:
- **2.1.1** Styles:
- **2.1.1.1** Upper construction:
- 2.1.1.2 Bottom construction:
- 2.1.2 Parts of A shoe:
- 2.1.2.1 Vamps:
- 2.1.2.2 Tongues and Tabs
- 2.1.2.3 Apron and vamp wings:
- 2.1.2.4 Toecaps and Wing caps:
- 2.1.2.5 Quarters:
- 2.1.2.6 Counters:
- 2.1.2.7 Saddles and Bars:
- 2.1.2.9 Appliqués:
- 2.1.2.9.1 Mudguards:

- 2.1.2.10 Back Strap:
- 2.1.2.11 Fastenings:
- 2.1.2.12 Linings:
- 2.1.2.13 Ornamentations:
- 2.1.2.14 Insole:
- 2.1.2.15 Welt:
- 2.1.2.16 Bottom filling:
- 2.1.2.17 Sole:
- 2.1.2.18 Heel:
- 2.1.2.19 Midsole:
- 2.1.2.20 Runner:
- 2.1.2.21 Components:
- 2.2 Foot Anatomy:
 - 2.2.1 Muscles of the Foot:
 - 2.2.2 Foot ligaments and tendons:
 - 2.2.3 Foot nerves:
 - 2.2.4 Foot blood Vessels:
 - 2.2.5 Foot and Toe Movement:
 - 2.2.6 The Foot Arches:
 - 2.2.7 Skin:
 - 2.2.8 Function of the foot:
 - 2.2.9 Changes of the foot shape:
 - 2.2.9.1 Changes due to Growth:
 - 2.2.9.2 Changes due to weight bearing:
 - 2.2.9.3 Changes due to Movement:
 - 2.2.10 Troubles of feet:
 - 2.2.10.1 Damage to skin:
 - 2.2.10.2 Troubles of the toes:

- 2.2.10.3 Troubles of the arches:
- 2.3 Foot survey:
- 2.3.1 Foot measurement:
- 2.3.2 Technique of foot measurements:
- 2.3.3 The measured parameters on the foot
 - 2.3.3.1 The length
 - 2.3.3.2 Width
 - 2.3.3.3 Joint measurement
- 2.4 Foot comfort and relationship to foot wear:
- 2.4.1 Foot care for the individual:
- 2.5 Sizing and Fitting Systems:
 - 2.5.1 Principles of size and fit:
 - 2.5.2 The concept of size system:
 - 2.5.2.1 British size system:
 - 2.5.2.2 American size system:
 - 2.5.2.3 French or Continental size [Paris Point]:
 - 2.5.2.4 Japanese size system:
 - 2.5.2.5 Mondo Point size [Metric size system]:
 - 2.5.2.6 The Europoint system:
 - 2.5.3 Conversion of sizes:
 - 2.5.4 Fitting of shoe:
 - 2.5.4.1 The fitting system:
 - 2.5.4.2 Fitting of a shoe:
 - 2.5.4.3 Main Points to the Fitting of Shoe:
 - 2.5.5 Last:
 - 2.5.5.1 Types of shoe last:
 - 2.5.5.2 Comparison between last and foot:
- 2.6 Elements of Fashion:

- 2.7 Preparation of A working standard:
- 2.7.1 Pattern generation:
- 2.7.2 Spring for basic designs:
- 2.8 CAD for Foot wears:
- 2.8.1 Capabilities of CAD systems in foot wear:
- 2.8.1.1 Hardware requirements:
- 2.8.2 CAD Pattern Engineering:
- 2.8.3 Future directions in CAD:
- 2.9 Three Dimensional Feet Scanning:

Chapter Three: Methodology

- 3.1 Experimentation:
- 3.2 Methods:
- 3.3 Materials:
- 3.4 Questionnaire:
 - 3.4.1 Content of questionnaire:
 - 3.4.2 The questionnaire objective:
 - 3.4.3 The targeted group:
- 3.5 Digital photography:
 - 3.5.1 Tools:
 - 3.5.2 Objective:
 - 3.5.3 Procedures:
- 3.6 Manual measurement:
 - 3.6.1 Tools:
 - 3.6.2 Objective:
 - 3.6.3 Procedures:

Chapter Four: Results

- 4.1 The result of questionnaire:
- 4.2 The result of manual measurement:

Chapter Five: Discussion

- 5.1 questionnaire analysis:
 - 5.1.1 Section one (Yes/No question):
 - 5.1.1.1 The first question:
 - 5.1.1.2 The second question:
 - 5.1.1.3 The third question:
 - 5.1.1.4 The fourth question:
 - 5.1.1.5 The fifth question:
 - 5.1.1.6 The sixth question:
 - Section one / General description:
- 5.2 Section Two: Comparisons
 - 5.2.1 The seventh question:
 - 5.2.2 The eighth question:
 - 5.2.3 The ninth question:
 - 5.2.4 The tenth question:
 - 5.2.5 The eleventh question:
 - 5.2.6 The twelfth question:
- 5.3 The manual measurement analysis:
 - 5.3.1 Group 1: 6 – 15 years old females:
 - 5.3.1.1 Foot length and joint girth:
 - 5.3.1.2 Foot length and waist girth:
 - 5.3.1.3 Foot length and instep girth:
 - 5.3.1.4 Foot length and long heel girth:
 - 5.3.1.5 Foot length and short heel girth:
 - 5.3.1.6 Foot length and Ankle girth:
 - 5.3.2 Group 2: 16 – 25 years old females:
 - 5.3.2.1 Foot length and joint girth:
 - 5.3.2.2 Foot length and waist girth:

- 5.3.2.3 Foot length and instep girth:
- 5.3.2.4 Foot length and long heel girth:
- 5.3.2.5 Foot length and short heel girth:
- 5.3.2.6 Foot length and Ankle girth:
- 5.3.3 Group 3: 26 –54 years old females:
 - 5.3.3.1 Foot length and joint girth:
 - 5.3.3.2 Foot length and waist girth:
 - 5.3.3.3 Foot length and instep girth:
 - 5.3.3.4 Foot length and long heel girth:
 - 5.3.3.5 Foot length and short heel girth:
 - 5.3.3.6 Foot length and Ankle girth:
- 5.3.4 Group 4: 6 – 15 years old males
 - 5.3.4.1 Foot length and joint girth:
 - 5.3.4.2 Foot length and waist girth:
 - 5.3.4.3 Foot length and instep girth:
 - 5.3.4.4 Foot length and long heel girth:
 - 5.3.4.5 Foot length and short heel girth:
 - 5.3.4.6 Foot length and Ankle girth:
- 5.3.5 Group 5: 16 – 25 years old males:
 - 5.3.5.1 Foot length and joint girth:
 - 5.3.5.2 Foot length and waist girth:
 - 5.3.5.3 Foot length and instep girth:
 - 5.3.5.4 Foot length and long heel girth:
 - 5.3.5.5 Foot length and short heel girth:
 - 5.3.5.6 Foot length and Ankle girth:
- 5.3.6 Group 6: 26 –60 years old males:
 - 5.3.6.1 Foot length and joint girth:
 - 5.3.6.2 Foot length and waist girth:

- 5.3.6.3 Foot length and instep girth:
- 5.3.6.4 Foot length and long heel girth:
- 5.3.6.5 Foot length and short heel girth:
- 5.3.6.6 Foot length and Ankle girth:

Chapter Six: Recommendations

- 6.1 Difficulties and obstacles:
- 6.2 Recommendation:
- References
- Appendix 1
- Appendix 2

Abstract

This research was conducted as a trial to get acquainted with the Sudanese foot shape and anatomy as it is necessary in the field of foot wear

industry. Besides, the research aims at proposing shoes size and fitting system for Sudanese dwelling in Khartoum state and studying the factors affecting the shape of Sudanese foot.

The study was conducted into two parts. The first part was questionnaire investigating a sample of 480 individuals from medical cadres operating in the medical and health institutions in Khartoum state about the most effective factors on the shape of Sudanese feet from Sudanese land vastness, land topography, work, diet and genetic factors.

In the second part, foot survey through manual measurement was conducted for sample of 327 individuals as 172 males and 155 females. The sample was distributed into 6 groups to be three for each sex according to their age and their foot length, width, joint, waist, instep , long heel , short heel and ankle girths were measured for each one.

The obtained results from the first part were subjected to analysis using The Statistical Package for Social Science application program (SPSS) which showed that the type of work is the most effective factor on the shape of Sudanese feet when it is compared with diet and land topography factors. The topography factor is more effective than diet factor. Whereas the genetic factor is the most effective factor on the shape of Sudanese feet when it is compared with land topography, diet and work factors. Generally, it was found that the genetic and work factors are more effective than the other factors on determination of the Sudanese foot shape.

Also, the obtained results from the second part were subjected to analysis using The Statistical Package for Social Science application program (SPSS) determining the common foot measurements for the group 1 of females with age ranging from 6 to 15 years old to be foot length (221.97mm) , width (87.478mm) , joint (204mm) , waist (197.72mm) , instep (207.28mm) , long heel (305.03mm) , short heel (279.03mm) and

ankle (228.39mm) girths. And for the group 2 of females with age ranging from 16 to 25 years old to be foot length (242.92mm) , width (85.00mm) , joint (208.99mm) , waist (219.71mm) , instep (207.28mm) , long heel (302.96mm) , short heel (276.30mm) and ankle (246.01mm) girths. And for the group 3 of females with age ranging from 26 to 54 years old to be foot length (256.45mm) , width (97.55mm) , joint (236.29mm) , waist (229.24mm) , instep (241.95mm) , long heel (352.90mm) , short heel (332.26mm) and ankle (268.00mm) girths.

For males groups , the analysis determined the common foot measurements for the group 4 of males with age ranging from 5 to 15 years old to be foot length (226.45mm) , width (91.47mm) , joint (212.52 mm) , waist (206.95mm) , instep (218.23mm) , long heel (313.10 mm) , short heel (287.42mm) and ankle (235.57mm) girths. And for the group 5 of males with age ranging from 16 to 25 years old to be foot length (267.66 mm) , width (103.78mm) , joint (242.26mm) , waist (239.19mm) , instep (257.92mm) , long heel (343.88mm) , short heel (318.15mm) and ankle (263mm) girths. And for the group 6 of males with age ranging from 26 to 60 years old to be foot length (270.26mm) , width (107.26mm) , joint (249.42mm) , waist (246.23mm) , instep (255.61mm) , long heel (366.77mm) , short heel (349.29mm) and ankle (272.90mm) girths. These results will surely the base on which the suitable shoe size and fitting system for the six groups to be made. In addition to the above, comparative analysis was conducted for the six groups between the foot length and girths which determine the common measurements for their feet and gave a clear picture for variations of foot sizes and shapes according to sex and age groups.

مستخلص الدراسة

اجري هذا البحث كمحاولة للتعرف على الشكل و التركيب التشريحي للقدم السودانية فيما يتعلق بـ مجال صناعة الاحدية ومحاولة الوصول لمقترح بنظام لقياس وضبط للاحذية داخل ولاية الخرطوم. بالإضافة الى دراسة تشريح القدم وبكل ما يتعلق بالقدم من مؤثرات تؤثر على شكل القدم السودانية.

في القسم الاول من الدراسة و عبر استبيان عينة من المختصين بلغت 480 فرد يعملون في المؤسسات الصحية وذلك للاجابة عن بعض الاسئلة التي تدور حول اكثـر العوامل تأثيراً على شكل القدم السودانية و تم تحديد عوامل اتساع مساحة السودان و طبيعة الارض و طبيعة العمل و طبيعة الغذاء و العامل الوراثي.

و في القسم الثاني من الدراسة اجري مسح ميداني لعينة تتـالـف من الذكور و الاناث بمختلف فئاتهم العمرية بولاية الخرطوم بلغت عدد 172 فرد من الذكور قسموا الى ثلاثة مجموعات عمرية و عدد 155 فرد من الاناث قسموا الى ثلاثة مجموعات عمرية حيث تم قياس ابعـاد طول القدم و عرضها مع محـيطـات مـفصلـ الـقدمـ وـ وـسـطـ الـقدمـ وـ مشـطـ الـقدمـ وـ الكـعبـ الطـوـيلـ للـقدمـ وـ الكـعبـ القـصـيرـ وـ كـاحـلـ الـقدمـ.

اخضـعتـ النـتـائـجـ المـتـحـصـلـ عـلـيـهاـ منـ القـسـمـ الـاـولـ منـ الـبـحـثـ لـلـتـحـلـيلـ عـبـرـ بـرـنـامـجـ الحـزمـ الـاـحـصـائـيـ لـلـعـلـومـ الـاـجـتمـاعـيـ SPSSـ وـ التـىـ اـظـهـرـ التـحـلـيلـ انـ عـاـمـلـ طـبـيـعـةـ عـلـىـ عـلـىـ شـكـلـ الـقـدـمـ مـنـ طـبـيـعـةـ الـغـذـاءـ وـ طـبـيـعـةـ الـاـرـضـ عـنـ المـقـارـنـةـ بـيـنـهـمـ.ـ وـ كـذـلـكـ وـجـدـ انـ عـاـمـلـ طـبـيـعـةـ عـلـىـ شـكـلـ الـقـدـمـ مـنـ عـاـمـلـ طـبـيـعـةـ الـغـذـاءـ عـنـ المـقـارـنـةـ بـيـنـهـمـ.ـ كـمـاـ وـجـدـ انـ عـاـمـلـ الـوـرـاثـيـ اـكـثـرـ تـأـثـيرـاـ مـنـ عـاـمـلـ طـبـيـعـةـ الـغـذـاءـ عـنـ المـقـارـنـةـ بـيـنـهـمـ.ـ وـ مـاـ سـبـقـ تـوـصـلـ إـلـىـ أـنـ كـلـ مـنـ عـاـمـلـ الـوـرـاثـيـ وـ طـبـيـعـةـ عـلـىـ عـلـىـ شـكـلـ الـقـدـمـ السـوـدـانـيـ مـنـ عـاـمـلـ طـبـيـعـةـ الـاـرـضـ وـ الـغـذـاءـ.

وـ كـذـلـكـ اـخـضـعـتـ نـتـائـجـ الـقـسـمـ الثـانـيـ منـ الـبـحـثـ لـلـتـحـلـيلـ عـبـرـ بـرـنـامـجـ الحـزمـ الـاـحـصـائـيـ لـلـعـلـومـ الـاـجـتمـاعـيـ SPSSـ وـ قـدـ تـوـصـلـ إـلـىـ أـنـ مـتـوـسـطـاتـ اـبعـادـ الـقـدـمـ لـلـمـجـمـوـعـةـ الـاـولـىـ وـ التـىـ تـتـالـفـ مـنـ الـاـنـاثـ ذـوـ الـاعـمـارـ بـيـنـ 6ـ إـلـىـ 15ـ سـنـةـ هـيـ طـوـلـ الـقـدـمـ (221.97ـ مـلـ) وـ عـرـضـهـاـ (87.478ـ مـلـ) مـعـ مـحـيـطـاتـ مـفـصـلـ الـقـدـمـ (204ـ مـلـ) وـ وـسـطـ الـقـدـمـ (197.72ـ مـلـ) وـ مشـطـ الـقـدـمـ (207.28ـ مـلـ) وـ الـكـعبـ الطـوـيلـ لـلـقـدـمـ (305.03ـ مـلـ) وـ الـكـعبـ القـصـيرـ (279.03ـ مـلـ) وـ كـاحـلـ الـقـدـمـ (228.39ـ مـلـ) وـ مـتـوـسـطـاتـ اـبعـادـ الـقـدـمـ لـلـمـجـمـوـعـةـ الثـانـيـةـ وـ التـىـ تـتـالـفـ مـنـ الـاـنـاثـ ذـوـ

الاعمار بين 16 الى 25 سنة هي طول القدم (242.92 ملم) و عرضها(85.00 ملم) مع محيطات مفصل القدم(208.99 ملم) و وسط القدم(219.71 ملم) و مشط القدم (207.28 ملم) و الكعب الطويل للقدم (302.96 ملم) و الكعب القصير (276.30 ملم) و كاحل القدم (246.01 ملم). و متوسطات ابعاد القدم للمجموعة الثالثة و التي تتتألف من الاناث ذو الاعمار بين 26 الى 54 سنة هي طول القدم (256.45 ملم) و عرضها(97.55 ملم) مع محيطات مفصل القدم(236.29 ملم) و وسط القدم(229.24 ملم) و مشط القدم (241.95 ملم) و الكعب الطويل للقدم (352.90 ملم) و الكعب القصير (332.26 ملم) و كاحل القدم (268.00 ملم). بالنسبة للذكور قد توصل الى ان متوسطات ابعاد القدم للمجموعة الرابعة و التي تتتألف من الذكور ذو الاعمار بين 5 الى 15 سنة هي طول القدم (226.45 ملم) و عرضها(91.47 ملم) مع محيطات مفصل القدم(212.52 ملم) و وسط القدم(206.95 ملم) و مشط القدم (218.23 ملم) و الكعب الطويل للقدم (313.10 ملم) و الكعب القصير(287.42 ملم) و كاحل القدم (235.57 ملم) و متوسطات ابعاد القدم للمجموعة الخامسة و التي تتتألف من الذكور ذو الاعمار بين 16 الى 25 سنة هي طول القدم (267.66 ملم) و عرضها(103.78 ملم) مع محيطات مفصل القدم (242.26 ملم) و وسط القدم(239.19 ملم) و مشط القدم (257.92 ملم) و الكعب الطويل للقدم (343.88 ملم) و الكعب القصير (318.15 ملم) و كاحل القدم (263 ملم). و متوسطات ابعاد القدم للمجموعة السادسة و التي تتتألف من الاناث ذو الاعمار بين 26 الى 60 سنة هي طول القدم (270.26 ملم) و عرضها(107.26 ملم) مع محيطات مفصل القدم(249.42 ملم) و وسط القدم(246.23 ملم) و مشط القدم (255.61 ملم) و الكعب الطويل للقدم (366.77 ملم) و الكعب القصير (349.29 ملم) و كاحل القدم (272.90 ملم). و شكلت المعلومات السابقة مقاسات الحذاء الانسب للباس المجموعات الستة.

بالاضافة لما ذكر اجريت مقارنة بين اطوال الاقدام و المحيطات بالنسبة للمجموعات الستة حددت الاطوال الشائعة و اعطت صور متعدد لاحجام الاقدام وفق النوع و الفئة العمرية