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Forensic podiatry evidence and admissibility in court

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ABSTRACT

Daubert standard is a set of criteria used to determine whether an expert testimony is admissibility in Court. Under the Daubert standard, the trial judge serves a role as the “gatekeeper” who determines whether expert testimony is considered reputable and relevant. Similarly, the judge employs a Dubert test to verify whether the testimony of the expert is based on scientifically valid reasoning and whether it has been properly applied to the facts of the issue [1][2]. The procedure of scientific examination that fails to comply with the Daubert standard may result in the rejection of any expert testimony in the court. In the matter of footwear impression evidence examination, the evidence of footwear impression identification was first accepted in court in 1786 in the Richardson case at Kirkcudbright in Scotland [3]. Footwear impression evidence has been accepted in the US Court since the 1930s. The techniques and methods used in footwear evidence examination are widely accepted in several forensic science communities and the ACE-V methods have been described in numerous forensic journals, books, and seminars around the world. Evidence of footwear impression is regularly accepted in courts in the United States, Canada, and Europe as well as other many countries in the world but so far several Indian courts have ruled that the footprint and footwear impression evidence is a “rudimentary science” and they cannot be safely relied upon. [4][5][6]

Keywords: *Daubert Standard, Forensic Podiatry, Footprint, Footwear Impression Evidence, Expert Witnesses.*

1. INTRODUCTION

In almost every criminal investigation it is necessary to determine and establish that whether a particular person or persons may or may have not been present at the scene of the crime. For this reason, the collection, preservation, and examination of physical evidence have become more frequent in the law enforcement community. The application of forensic science is an important part of the investigation. Forensic sciences are used to identify a person and link the perpetrator to the victim of a crime scene. Evidence of forensic examination helps to establish the veracity of the case in the court of law. Footprint or footwear impression evidence is a source of physical evidence to identify the culprit in a criminal investigation.

It is difficult for an offender to avoid leaving a footprint or footwear impression at a crime scene; therefore, footprint or footwear impression to appear at the scene of a crime. These impressions can be examined by a forensic expert and used to identify the culprit. Like a fingerprint, the footprint and footwear impression of every person is unique due to the difference in the ridge, patterns and other unique characteristics features make each person’s footprints unique and can be used to identify a person (*State v. Rogers*, 233 N.C. 390 (1951)). It provides valuable information about the criminals such as height, gait pattern, or any possible distortion. Evidence of footprints or footwear impression evidence can be studied to provide valuable information regarding the size, shape, cut, or any related mark of the shoe to match the offender’s shoe. (*State v. Williams*, 308 N.C. 47 (1983); *State v. Jackson*, 302 N.C. 101 (1981))

2. VALUE OF FOOTPRINTS

Footprints are very important crime work. Footprints like other parts of the body, such as the fingerprint, face, have their own characteristics which help to identify individuals. The footprint science is based on the principle that ‘no two persons will have similar footprint’ or ‘footprints of two persons are not alike’. In other words, footprints are unique to individuals like fingerprints [7]. Every individual’s prints contain friction ridge that are unique to that person. Even the footprints and fingerprints of identical twins are different. Furthermore, friction ridge minutiae remain naturally unchanged throughout a person’s life [8].

For personal identification, must possess the following three features i.e 1. INDIVIDUALITY 2. CONTINUITY 3. IMMUTABILITY.

Personal identification through footprint methods satisfies all of these requirements. The skin of the palm and fingers of the hands and planter portion of the feet and toes have different types of skin from another part of the body. The friction areas of the finger, palm, feet, and toes have papillary ridges which form unique patterns and contain individual characteristics. The possibility of any two human beings having surface areas of skin on their fingers, palms, or feet that have exactly the same ridge characteristics are so remote that it is beyond the realm of probability. So, footprint established the first essential, "INDIVIDUALITY."

The formation of the friction ridge on the palm, finger, feet, and toes of a human being several months before birth and remains present and unchanged throughout the entire lifetime. The friction ridges on the palm, fingers, feet, and toes are also intact after death until the decomposition of the body. So, footprint established the second essential i.e "CONTINUITY."

During the entire lifetime of a human being, the ridges characteristics of fingers, palm of his hands, and the planter portion of the feet and toes remain exactly in their original formations and cannot be changed. So, footprint established the third essential i.e IMMUTABILITY. [9]

In this modern period of time it exists that, DNA genotyping represents a superior identification technology. But a legible footprint with clear friction ridge provides the most certain form of identification. The footprint evidence may be of more immediate value to law enforcement officials for the following reasons: 1. Footprints of identical twins is different, but the modern DNA technology presently cannot distinguish between them. 2. Footprint comparison can be made identification by an expert within a short period of time. But DNA analysis can take up to 3 months to complete. 3. Footprints examination can be completed at very low or negligible expense. But other words DNA analysis can cost several thousands. 4. Footprint exhibits has no preservation cost; preservation of DNA sample can cost several thousands. 5. Footprint sample contamination and chance of disintegrated is very low; chance of contamination and disintegration of DNA samples is very high.

Although DNA analysis represents an excellent technology for determining probable identity but it may not satisfy the instant investigative requirements of law enforcement agencies due to sample collection procedure, its cost and the required time to complete analysis. [8]

3. FOOTPRINT EVIDENCE AND THE SCENARIO OF FOREIGN COUNTRIES.

The science of footwear impression evidence is not new or novel; the expert testimony of footwear comparison has been accepted in U.S Courts for years *State v. Williams*, 308 N.C. 47 (1983), *State v. Bullard*, 312 N.C 129 (1984), *State v. Jackson*, 302 N.C. 101 (1981), *State v. Pratt*, 306 N.C. 673 (1982) (the *United States v. Rodgers*, 85 Fed. Appx. 483, 486-87 (6th Cir.2004), *United States v. Ross*, 263 F.3d 844, 846-47 (8th Cir.2001); the *United States v. Allen*, 207 F. Supp. 2d 856, 866 N.D.Ind.2002); the *United States v. Youngberg*, 43 M.J. 379 (C.M.A.1995)). Forensic experts have established that the theory and technique of footwear impression examination have been tested, the science has been subjected to peer-review and publication, the scientific technique has been evaluated for its known or potential error rate, and the science of footwear analysis has been generally accepted (Daubert, 509 U.S. at 593-94, 113 S. Ct. 2786; Mooney, 315 F.3d at 62.).

For some cases where the Federal appellate courts recognized the trial courts for admission of footwear impression evidence both before and after the Daubert, e.g., *Hopkins v. Cockrell*, 325 F.3d 579, 581 (5th Cir.2003); *Love v. Young*, 781 F.2d 1307 (7th Cir.1986); the *United States v. Givens*, 767 F.2d 574, 582-83 (9th Cir.1985), the *United States v. Ferri*, 778 F.2d 985, 988-90 (3d Cir.1985); *McDonnell v. the United States*, 455 F.2d 91 (8th Cir.1972), the *United States v. Ferreira*, 821 F.2d 1 (1st Cir.1987) (trial judge's exclusion of shoeprint impression evidence upheld); the *United States v. Stabler*, 490 F.2d 345 (8th Cir.1973) (footprint evidence excluded on foundation grounds). The *United States v. Mahone*, 328 F. Supp. 2d 77 (D. Me. 2004).

All of the courts in the United States and its territorial possessions readily accept this type of testimony with full faith and confidence that fingerprints, footprints, and palm prints do not lie[10].

According to FBI Law Enforcement Bulletin (January'1945), the majority hospitals of US began to be recorded footprints on the birth certificate for identification of infants since the 1945s. The reason for this is that the ridges are more pronounced on the feet and it is easier to obtain prints of this surface from new-born babies and footprint is to provide the permanent records of individuality. The newborn footprints, along with a mother's fingerprints, became part of the hospital's records as a requirement by states to help prevent mix-ups in hospital nurseries. [11] [12] [13]. "Footprints have a ridge pattern that stays the same through a person's life. The space between those ridges changes, but the uniqueness in the pattern does not,"(David Yarnell, CEO of CertaScan Technologies). The National Center for Missing and Exploited Children still recommends that hospitals capture a baby's footprints. According to 2016 survey done by the center, about 90 percent of hospital still do so, but through traditional ink-and-paper or inkless paper method [12] [13].

Now, several hospitals in the USA have been using CertaScan Technologies for recording the footprints of newborn babies. "It's a lifetime benefit for the family. "These footprints provide a line of security for the rest of their life." (Laura Hall, clinical director for Women's and Pediatric care for UHealth in northern Colorado) [12] [13].

The article "*Journal of Forensic Identification*" (2007) reports on a rare infant-to-adult footprint comparison for the purposes of determining the veracity of an individual's declaration of United States (U.S.) citizenship [14]. The U.S Department of Justice

allowed to accepting the infant and adult footprints for individual identification as a U.S citizen and approves the application of a U.S passport [15] [16].

4. FOOTPRINT EVIDENCE AND SCENARIO OF INDIA.

The legislative structure of India allows the footprint and fingerprints of an accused to be taken as evidence during the investigation of a case. Section 51 of the Criminal Procedure Code allows the police to take the accused's shoes into custody as evidence for comparison to the marks found at the scene of the crime. The Identification of Prisoner Act 1920 permitted measurements of a person(s) arrested in connection with a crime to be taken. These measurements include fingerprints and footprints etc (*Section-2*). Under section 5 of the Identification of Prisoner Act, a magistrate is empowered to direct any persons to submit their footprint and fingerprint for the need of any investigation or procedure under the Code of Criminal Procedure. Refusal to comply with the order is an offense under section 186 of the Indian Penal Code. (Supreme Court of India *Sonvir @ Somvir vs The State Of Delhi* on 2 July, 2018)

Evidence of footwear impression is accepted and does not violate any legal right in India. The Supreme Court of India has ruled that directing a person to give footprints for corroboration of evidence is not against the right to protection against self-incrimination guaranteed by Article 20(3) of the Constitution of Indian (*State of U.P v. Sunil*). Impression evidence is used to identify a person and is not considered as "being a witness" against oneself. Evidence of footprint and footwear impression evidence under the preview of forensic evidence and can be used in court. However, the evidentiary value of footwear impression evidence is limited in court. Footprint or footwear impression evidence is circumstantial and weak in form. The Supreme Court of Indian has ruled in *Mohd. Aman v State of Rajasthan* (1997) that, the footprint evidence is not a developed science like other science and they cannot be safely relied upon. The evidence can only be used to reinforce the conclusions regarding the identity of a culprit that has already been arrived at based on other evidence. The Supreme Court of India has been ruled that the evidentiary value of footprint evidence is not well-established and that footprint evidence could not be used in the absence of any other reliable evidence pointing to the identity of the offender (*Mohd. Aman v State of Rajasthan* (1997); (*Ram Singh and others vs. State of Rajasthan and others* -2015).

It appears that the evidentiary value of footprint or footwear impression evidence is less than that of fingerprints (*Paramban Mammadu And Ors. vs The King-* 1949). Footprint or footwear impression evidence alone cannot conclusively identify the culprit of a case in the court of law. The Court must be assured that the footprint evidence is genuine and applied proper procedure during collection of evidence and maintained the proper chain of custody and analyzed it properly using scientific methods (*Vikram Singh vs State Of Haryana-2006*);(*Sunder and Others vs. State of Rajasthan*). The apprehension to believe in footprint evidence remains. Related to forensic podiatry evidence has been slowly increasing used in Indian Court, but the podiatry evidence is not conclusive proof of identity in India.

In "Smt. Selvi & Ors.V. State of Karnataka"-2010 (para-23,24), The Supreme Court of India mandates to comply with the "Daubert standard" to the admissibility of expert testimony in the trial court as scientific evidence. Any scientific examination procedure that fails to comply with the Daubert standard may result in the rejection of any expert testimony in the court. The Supreme Court of India said that "the trial judge is expected to perform a 'gate-keeping' role to decide on the admission of expert testimony based on scientific techniques".

5. THE DAUBERT STANDARD FOR EXPERT TESTIMONY.

In the year 1993, The Supreme Court of the United States of America set the standard for expert testimony admissibility in the case, "*Daubert v. Merrell Dow Pharmaceuticals, Inc.*" Under the Daubert standard, the court provided guidelines for determining whether an expert's methodology is valid or not. The Daubert guideline contains five factors of consideration i.e

- 1) *Whether the theory or technique in question can be and has been tested;*
- 2) *Whether it has been subjected to peer- review and publication;*
- 3) *Its known or potential error rate;*
- 4) *The existence and maintenance of standards controlling its operation.*
- 5) *Whether it has attracted widespread acceptance within a relevant scientific community.*

These five criteria resolve to prevent unreliably or otherwise "junk science" or "rudimentary science" from being heard as evidence in an expert's substantive testimony. The burden is on the proponent of the testimony to determine its admissibility by a preponderance of proof.

6. ADMISSIBILITY OF SCIENTIFIC EVIDENCE UNDER THE DAUBERT STANDARD.

Federal Rules of Evidence 702 is guides the court's analysis in determining admissibility of expert testimony in trial Court. Federal Rules of Evidence 702 makes no distinction between "scientific knowledge" and "technical knowledge" or "other specialized knowledge." The expert testimony is only permissible to admit in court if the witness is qualified as an expert by knowledge, skill, experience, training, or education and meet the subsequent conditions under FRE 702 i.e

- 1) *The expert's scientific, technical, or other specialized knowledge will help the tries of fact to understand the evidence or to determine a fact in issue.*
- 2) *The testimony is based on sufficient facts or data.*
- 3) *The testimony is the product of reliable principles and methods.*
- 4) *The expert has reliably applied the principles and methods to the facts of the case.*

7. FORENSIC PODIATRY EVIDENCE AND DAUBERT STANDARD.

7.1. The "Theory or Technique" has been tested (Daubert Standard, Factor-1)

7.1.2 Theory of footwear evidence examination and identification:

The impression found in Crime Scene is called the “unknown or question” impression. The shoe or footwear collect from the accused or suspect is called “known shoe”. The question impression can be compared to a test impression of the sole of a known shoe called the “known test impression”. The outer sole of footwear experiences damage (wear, accidental damage) as it was worn and used. When that outer sole comes into contact with a respective surface, it can leave an impression on the surface. That impression is the representation of that outer sole and the characteristics of and on that shoe. That unknown or crime scene impression can be located and collected. That unknown impression can be compared to the sole of known footwear or with the known test impression of that sole. According to sufficient quantity and quality of characteristics features of the question impression, it can be compared to the known impression of a known shoe. Similarity and dissimilarities can be observed between the question impression and the known shoe or known shoe impression and identification can be reached (a conclusion of individuality).

7.1.3 Techniques: The techniques and methodology employed in locating and collecting footprint and footwear impression evidence have been described in numerous articles and books for a long period of time. The standard techniques and methods in the field include photography, electrostatic dust lifting, gel lifts, adhesive lifts, tracing, casting, etc. The method used in footwear evidence examination is “ACE-V” (Analysis-Comparison-Evaluation-Verification”).

7.1.4 Examination Methodology: (“ACE-V”) It has been tested and affirmed in many ways that, applying ACE-V methodology footprint and footwear impression evidence can be identified to an article of footwear given sufficient quality and quantity of characteristics features. In training or workshop exercises in the scientific communities, it is tested when everyone finds out the same thing and they come to the same conclusion. It is tested and affirmed in every examined and the results are verified. The verification process ensures the standard and tests the techniques and methodology that they work. Another form of testing is made through research and experimentation in attempts to replicate the impression and explanation about the match or mismatch the known and unknown impression. This “ACE-V” methodology is employed for the identification of footprint and footwear impression evidence and it has been described in various articles and books and encompasses several of the comparison sciences (fingerprints, footprints, footwear, tire marks, typewriting, etc).

The recent decision has been retained the reliability of the ACE-V methodology as applied to fingerprint identification. In *United States v. Allen*, 207 F. Supp. 2d 856 (N.D. Ind. 2002), the court found, “no reason to extend the arguments of these view to the techniques of footwear impression evidence examination is substantially the same as fingerprint examination.” The *United States v. Hendershot*, 614 F.2d 648, 654 (9th Cir.1980) (Evaluating of footprint impression evidence lifting techniques under the pre-Daubert framework).

7.2. The “Theory or Technique” has been subjected to peer- review and publication. (Daubert Standard, factor-2)

A. Some books have been written dealing exclusively with the examination of footprint and footwear impression evidence:

- i) Bodziak, J. William “Footwear Impression Evidence: Detection, Recovery and Examination” 2nd ed. CRC Press, 2000
- ii) Abbott, John “Footwear Evidence” Charles C. Thomas Publishing, 964.
- iii) Cassidy J. Michael “Footwear Identification” Canadian Government Publishing Center, 1980
- iv) Hilderbrand, Dwane “Footwear, The Missed Evidence” Staggs Publishing Co.1999
- v) Bodziak, J.William “Forensic Footwear Evidence: ” CRC Press, 2017.
- vi) DiMaggio, John A and Vernon, Wesley “Forensic Podiatry: 2nd ed. CRC press,(2017).
- vii) Robbins,M.Louise “Footprints”-Collection, Analysis, and Interpretation. Charles C Thomas Publisher-1985.

B. Some books that cover the examination of Footprint and footwear impression evidence examination include:

- i) Fisher, Barry “Techniques in Crime Scene Investigation” 6th ed. CRC Press, 2002
- ii) Deforest, Peter; Gaensslen, Robert; Lee, Henry “Forensic Science-An Introduction to Criminalistics” McGraw-Hill, 1983
- iii) Kiely, Terrence “Forensic Evidence: Science and the Criminal Law” CRC Press, 2001
- iv) Cummins, H & Midlo, C “Fingerprint Palm and Soles” An introduction of Dermatoglyphics. Dover Publications,Inc, New York1961.
- v) Wilder,H.H & Wentworth, B “ Personal Identification” Methods for Identification of Individuals Living and Dead. The Gorham Press, Boston U.S.A 1918.
- vi) Nabar, B.S “Forensic Science”-In Crime Investigation. 3rd ed. Asia Law House, Hyderabad,2015.
- vii) Sharma, B.R “Scientific Criminal Investigation” 2nd ed. LexisNexis, Haryana, India, 2017.
- viii) Bapuly,A.K “Forensic Science”-Its Application in Crime Investigation. Paras Publisher,2006.
- ix) Loesch,Z.Danuta “Quantitative Dermatoglyphics”-Classification, Genetics and Pathology. Oxford University Press-1983.

C. Articles on footwear impression examination have been published in numerous peer-reviewed journals including:

- i) *Journal of Forensic Identification(USA)* (<https://www.theiaj.org>)
- ii) *Identification Canada.(Canada)* (<https://www.cis-sci.ca>)
- iii) *Journal of Forensic Science (USA)*(<https://www.aafs.org>)
- iv) *Journal of Canadian Society of Forensic Science.(Canada)* .(<https://www.csfs.ca>)
- v) *FBI Law Enforcement Bulletin(USA)* (<https://www.leb.fbi.gov>)
- vi) *Forensic Science Communication(USA)* .(<https://www.fbi.gov>)

- vii) *Science and Justice* (UK).(<https://www.elsevier.com>)
- viii) *Association of Firearms and Tool Marks Examiners Journal* (USA) (<https://afte.org>)
- ix) *Journal of Legal Medicine*.(USA) (<https://www.springer.com>)
- x) *Criminal Police Review*.(US Department of Justice, <https://www.ojp.gov>)
- xi) *The Police Journal* (Great Britain). (<https://us.sagepub.com>)
- xii) *Journal of the Forensic Science Society* (Great Britain) (<https://www.sciencedirect.com>)
- xiii) *Royal Canadian Mounted Police Gazette*” (Canada) (<https://www.rcmp-grc.gc.ca>)
- xiv) *Report of National Institute of Police Science* (Japan). (<https://www.npa.go.jp>)
- xv) *Forensic Science International*. (<https://www.journals.elsevier.com>)
- xvi) *Information Bulletin for Shoeprint/Toolmark Examiners* (European).
- xvii) *Journal of the Indian Academy of Forensic Sciences* (India).
- xviii) *La Police Scientifique*” (France).
- xix) *Fingerprint and Identification Magazine*.
- xx) *Annals of Physical Medicine* .
- xxi) *Journal of Criminal Law and Criminology*.
- xxii) *Kriminalistik* (Germany).
- xxiii) *Fingerprint Whorld* (Great Britain).

D. There are numerous presentations on footwear evidence examination given at numerous forensic science meetings and workshop such as:

- i) International Association For Identification.
- ii) Regional Divisions of International Association For Identification.
- iii) American Academy of Forensic Science.
- iv) FBI International Symposium on Footwear and Tire tread Evidence (1994).
- v) Canadian Identification Society.
- vi) International Association of Forensic Science.
- vii) European Shoeprint/Toolmark Association.
- viii) European Network of Forensic Science Institutes.
- vix) European Meeting of Shoeprint/Toolmark Examiners.
- x) European Meeting of Forensic Science.

E. Footwear Certification program is available through the International Association For Identification (IAI).

7.3. The “Theory or Technique” known or potential error rate. (Daubert Standard, factor-3)

The “error” rate of ACE-V methodology is zero (*United States v. Havvard*, 260 F.3d 597 (7th Cir. 2001)). The shoe either made the impression or did not do it. The reliability of the methods used in the footprint or footwear impression evidence examination (or any scientific examination) is proved by the reality that the results are repetitive from one examiner to the next. Repeatability testifies to technical review of case work, verification of case work results, training practice, internal proficiency test, and external proficiency test. Any “error” that occurs is because an individual examiner failed to apply the technique and method properly during examination of footwear evidence and therefore came to a wrong/ erroneous conclusion. The reliability of the method is proved by its repetition; Thus, any “error” occurred by any examiner is detected in the “Verification” stage of the overall methods. In addition, footwear evidence is always preserved to be examined by another qualified footwear examiner. This “ACE-V” methodology is employed for the identification of footwear impression evidence and it has been described in various articles and books and encompasses several of the comparison sciences (fingerprints, footprints, footwear, tire marks, typewriting, etc).

7.4. The existence and maintenance of standards controlling its operation. (Daubert Standard, factor-4)

The Standard Operating Procedure (SOP) of footwear impression evidence examination has been controlled by several national and international forensic science standards boards, including-

1. NIST Forensic Science Standard Board:(<https://www.nist.gov>)
2. The Chartered Society of Forensic Science (CSFS) (<https://www.csfs.org>)
3. The International Association For Identification (IAI) (<https://www.theiai.org>)
4. American Academy of Forensic Science (AAFS) (<https://www.aafs.org>)
5. The European Network of Forensic Science Institute (ENFSI) (<https://enfsi.eu>)
6. Academy Standard Board (ASB) (<http://www.asbstandardsboard.org>)
7. Scientific Working Group for Shoeprint and Tire Tread Evidence (SWG TREAD) (<https://www.treadforensics.com>)

This “ACE-V” methodology is employed for the identification of footwear impression evidence and it has been described in various articles and books and encompasses several of the comparison sciences (fingerprints, footprints, footwear, tire marks, typewriting, etc). Footwear impression examination is done the same way in over 77 foreign countries. As of 2014, the active member of the International Association For Identification (IAI) has more than 77 countries including India. [17] .

7.5. Widespread Acceptance (Daubert Standard, Factor-5).

In the year 1786, the testimony of footwear impression evidence was first accepted in court in the Richardson case in Scotland. Footwear impression evidence and expert testimony of footwear identification have been accepted in the courts of the United States of America since the 1930s. The techniques and methods used in footwear impression evidence examination are widely accepted in

the forensic science community, and the ACE-V method has been described in numerous forensic journals, books, and at several seminars around the world. Evidence of Footwear impression evidence has been accepted in courts in the United States, Canada, and Europe for years.

As of 2004, the active member of the International Association For Identification (IAI) has more than 40 countries including Argentina, Australia, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belgium, Bermuda, Bosnia/Herzegovina, Brazil, Bulgaria, Canada, Cayman Islands, China, Croatia, Denmark, El Salvador, Finland, France, Germany, Great Britain, Greece, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Korea, Kosovo, Lithuania, Macau, Mauritius, Mexico, Netherlands, Netherlands Antilles, New Zealand, Nicaragua, Northern Ireland, Norway, Oman, Pakistan, Panama, Philippines, Portugal, Puerto Rico, Qatar, Russia, Saudi Arabia, Seychelles, Singapore, Slovenia, South Africa, Spain, Sri Lanka, Sultanate of Oman, Sweden, Switzerland, Taiwan, Thailand, Trinidad and Tobago, Turks and Caicos Islands, United States of America, Uruguay, Yugoslavia.

According to the brochure of the 99th International Educational Conference (Minneapolis, Minnesota –USA, August 10-16, 2014), The International Association for Identification (IAI) is a professional membership organization comprised of persons from around the world who work in the field of forensic identification. As of 2014, the active members of IAI have more than 77 countries and 7,300 forensic experts and it is the largest and oldest forensic identification association in the world [17].

8. CONCLUSION

Forensic podiatry evidence is very important physical evidence and plays a significant role in criminal investigation and assists the judiciary system in identifying the culprit. Evidence of footprint and footwear impression is regularly accepted in courts in the United States, Canada, and Europe as well as other many countries in the world. The “ACE-V” methodology is employed for the identification of forensic podiatry evidence and it has been described in various articles and books and encompasses several of the comparison sciences (fingerprints, footprints, footwear, tire marks, typewriting, etc). Footprint and footwear impression examination is done the same way in over 77 foreign countries. As discussed above it revealed that, the forensic podiatry evidences also scientific evidence in the field of forensic science. The use of modern technology in forensic science increasing day by day to reducing the error rate and develop the methodology to improve the accuracy of footprint and footwear evidence analyses. The advantages of development in science and technology must be assimilated into the justice system to yield better results. Forensic podiatry evidence already proved in several courts in the world to a very useful tool in criminal investigations to apprehend criminal. In this modern period of time, the advantages of development in science and technology required to assimilate into the justice system to yield better results. Once reliability of the forensic podiatry evidence is assured in the open court of law in India, the Indian Courts also can rely on this important evidence to identify the culprit and convict them in the court of law.

9. ACKNOWLEDGMENTS

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