

# Knowledge, Attitude and Practice of Recreational Long-Distance Runners towards Using Running Shoes: A Survey

Gayatri Suresh<sup>1</sup>, Namrata Sidhaye-Bhadbhade<sup>2</sup>

<sup>1</sup>Intern, <sup>2</sup>Assistant Professor, Dept. of Musculoskeletal Physiotherapy, DES Brijlal Jindal College of Physiotherapy, Fergusson College Campus, Shivajinagar, Pune - 411004

Corresponding Author: Namrata Sidhaye-Bhadbhade

## ABSTRACT

**Background:** Use of the shoe has evolved greatly over the years. From being a necessity for protecting the feet, to being a functional necessity to meet the demands of various sports, its functions have varied over the years. In the recent years sports shoes have undergone a lot of technical changes to suit the sport. Running shoes have flexible characteristics and can be made to suit the runner. While the correct shoes can play a vital role in a runner's performance, improper running shoes have been known to cause various injuries.

**Aim:** To find the knowledge, attitude and practice of recreational long-distance runners towards using running shoes.

**Method:** Information was gathered using a Questionnaire which was administered to 109 long distance recreational runners. Collected data was presented in descriptive form.

**Results:** 74% of runners had fair to good knowledge about running shoes. 72% of the runners had a positive attitude for purchasing the suitable shoes but only 40% were able to implement it fairly in the practice.

**Conclusion:** Runners have positive attitude towards buying the shoes but they have scored averagely in domains of Knowledge and Practice. Hence, they should be made aware of their foot type, types of shoes, shoe selection and replacement criteria to help prevent shoe related running injuries and to improve their performance.

**Keywords** – Runners, Running shoes, Marathons, Running Injuries, Questionnaire

## INTRODUCTION

Use of the shoe has evolved greatly over the years. From being a necessity for protecting the feet from the ground, to being a functional necessity to meet the demands of various sports, the functions of a shoe have varied greatly over the years. In the recent years, sport shoes have undergone a lot of technological changes to suit the sport. For example, football shoes have spikes to get a good grip on the field. Basketball shoes have extra cushioning at the ankle and heel to absorb the impact of jump and land. Herringbone and hybrid shoe patterns are used for cross training and

dancing, etc. [1] While the shoes for other sports require certain irreplaceable technologies, shoes for running have flexible characteristics and can be made to suit the runner.

The main factor for a runner to consider while buying his/her shoe is the foot structure. Pronated feet, supinated feet, flat feet and neutral feet have different areas of impact on the ground while running. Hence, the running shoe should have shock absorption, cushioning, and support properties at those appropriate areas of the shoe. Improper running shoes have been known to cause various injuries in the

athletic population, Plantar Fasciitis, Ankle sprains, Stress Fractures, etc. [2]

There are different types of shoes in the market which cater to the different types of feet. Motion control shoes limit overpronation. Cushion trainer shoes are made for high arches. Stability shoes are made for neutral arches. [1] The different aspects of the shoe which are taken into consideration while selecting are the Heel Counter, Toe Box, Outsole, Midsole, Insole, Lace Patterns and the Flexibility. These aspects help to customise the shoe to the athlete's foot type i.e. the size and shape of the foot and the foot structure; whether it's pronated, supinated or a neutral foot.

Of various sports, running has gained a lot of popularity due to the minimal equipment required and the various benefits associated with it. Studies by Jens Jakob Andersen and Vania Nikolova show an increase of running population by 57% worldwide between 2009 and 2019, with an increase in participation of 229% in India. [3, 4]

Even though there are customisable shoes for runners, injuries caused by running shoes still remain to be prevalent.

Previous studies have concluded that wearing the right shoe can improve a runner's performance. [5] This study aims to find out the awareness and practice among recreational long-distance runners about the running shoes. Based on the results of the study, further steps can be taken to reduce the percentage of running injuries which are caused by the use of wrong shoes and improve the athletes' performance

## **MATERIALS AND METHODS**

**Study Design:** Descriptive

**Study Setting:** Community

**Study Population:** Long Distance Runners

**Sample Size:** 109

The first draft of the questionnaire was prepared after obtaining data from various articles and literature. It was then given to six professionals who have sound knowledge of biostatistics and the biomechanics of the foot. Face validation of

the questionnaire was obtained from these professionals.

The necessary changes were made in the questionnaire. The second draft consisted of 20 questions, with a total score of 25, and was categorised under the domains of Knowledge, Attitude and Practice. This draft was given to 15 long distance runners, to obtain reliability and to calculate sample size.

Reliability of the questionnaire was calculated using Cronbach's Alpha Internal Consistency test. Alpha value of 0.82 was obtained, which denotes good reliability. The calculated sample size was 109.

Recreational long-distance runners were selected as per the inclusion and exclusion criteria. Runners above the age of 15 years of age, who have been running a minimum distance of 5 kilometres and have been running since at least 2 years were included in the study.

Since the questionnaire is in English, runners who were not proficient in the English language were excluded.

Oral consent was obtained from the 109 runners and they were requested to fill the questionnaire.

Foot Posture Index was assessed and foot size was measured using the Brannock Device to crosscheck the participants' answers.

## **Outcome Measures**

**Foot Posture Index** - The FPI-6 is a novel method of rating foot posture using set criteria and a simple scale. It is a clinical tool used to quantify the degree to which a foot is pronated, neutral or supinated. It is a measure of standing foot posture. It has 6 components, Talar head palpation, Curves above and below malleoli, Calcaneal Inversion/Eversion, Talo-navicular congruence, Medial arch height and Forefoot Abduction/Adduction. Each component has a score between -2 to +2. Negative scores indicate supinated foot. Positive scores indicate pronated foot. Zero indicates neutral foot. [6, 7]

**Brannock Device** – It is a foot measuring device which measures heel to toe length, arch length and foot width. Combination Brannock Device was used in which the pink scale measures women’s feet and the blue scale measures men’s feet. [8]

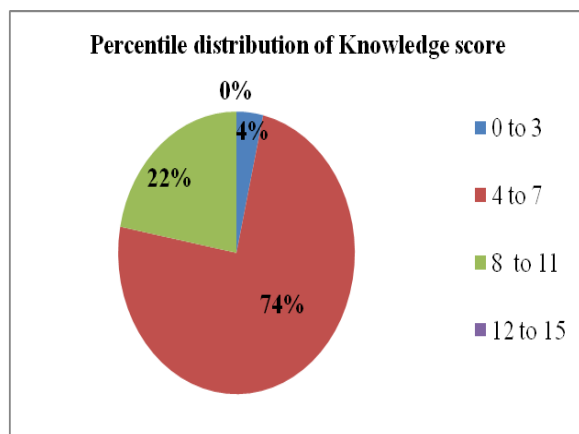
In this study above mentioned device is used to measure the foot size.



Fig.1: Combination Brannock Device

## RESULTS

Data was analysed on the basis of descriptive analysis to find out the knowledge, attitude and practice of recreational long-distance runners towards using running shoe



Graph 1

**Table 1: Awareness of shoe size**

Q1	Frequency	Percentage
Score 0	13	11.9
Score 1	96	88.1
TOTAL	109	100.0

**Table 2: Awareness of foot size**

Q2	Frequency	Percentage
Score 0	71	65.1
Score 1	38	34.9
TOTAL	109	100.0

**Table 3: Awareness of foot type**

Q3	Frequency	Percentage
Score 0	61	56.0
Score 1	48	44.0
TOTAL	109	100.0

**Table 4: Knowledge about the different types of shoes in the market**

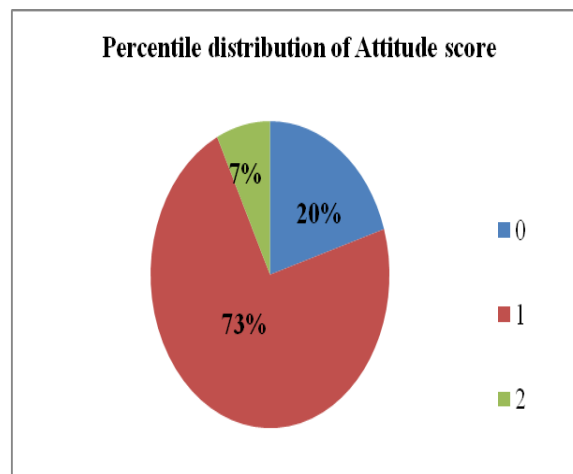
Q5	Frequency	Percentage
Score 0	91	83.5
Score 1	15	13.8
Score 2	3	2.8
TOTAL	109	100.0

**Table 5: Knowledge of all the shoe replacement criteria**

Q6	Frequency	Percentage
Score 0	25	22.9
Score 1	67	61.5
Score 2	17	15.6
Score 3	0	0.0
TOTAL	109	100.0

**Table 6: Awareness about the ideal weight of the shoe**

Q7	Frequency	Percentage
Score 0	4	3.7
Score 1	105	96.3
TOTAL	109	100.0



Score	Grade
0	Poor
1	Good
2	Excellent

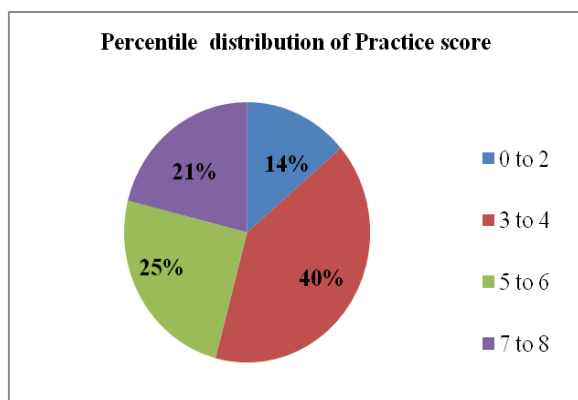
Graph 2

**Table 7: Whether runners feel the need get their feet evaluated by a foot specialist before purchasing shoe**

Q1	Frequency	Percentage
Score 0	100	91.7
Score 1	9	8.3
TOTAL	109	100.0

**Table 8: Whether runners feel the need to get their shoe assessed before purchase**

Q2	Frequency	Percentage
Score 0	23	21.1
Score 1	86	78.9
TOTAL	109	100.0



Score	Grade
0 to 2	Poor
3 to 4	Average
5 to 6	Good
7 to 8	Excellent

**Graph 3**

**Table 9: Whether runners purchased their shoes online or at a shoe store**

Q1	Frequency	Percentage
Score 0	22	20.2
Score 1	87	79.8
TOTAL	109	100.0

**Table 10: Correct shoe selection criteria of runners**

Q2	Frequency	Percentage
Score 0	22	20.2
Score 1	13	11.9
Score 2	28	25.7
Score 3	22	20.2
Score 4	24	22.0
TOTAL	109	100.0

**Table 11: The purpose for which the runners use their running shoes**

Q6	Frequency	Percentage
Score 0	72	66.1
Score 1	37	33.9
TOTAL	109	100.0

## DISCUSSION

This study aimed to check the awareness and knowledge of the runners about running shoes, whether they incorporate it into practice and if they have the right attitude about the same. Long distance runners were selected for the study due to the increased popularity of running and the increased frequency of running events.

Along with benefits, running is also associated with various injuries, due to the fact that running is a high impact activity. Percentage of running injuries varies between 20% – 85%, predominantly injuries of the lower extremity. [9] Improper running biomechanics, hard surfaces, body weight, etc are few of the reasons for injuries. [10-12]

While most of the runners had the right attitude towards different aspects regarding the shoes, many had average knowledge of shoe replacement, types of shoes and shoe evaluation and hence couldn't incorporate it efficiently into their practice.

Few reasons for this could be that the runners rely on online purchases, do not derive knowledge from reliable sources, or are misguided and hence cannot incorporate it into practice. Statistics of this study show that 80% of the target population purchased their shoes online.

Ideal shoe size is to be slightly bigger than the measured foot size of an athlete, to avoid cramping of toes and circulation issues. Hence it is essential for a runner to know about both. 88% of the runners were aware of their shoe size. In comparison, 34% were aware of their foot size.

44% of target population were aware about their foot type, which is an important aspect for shoe selection. Although, foot structure and type of shoe used by them did not co-relate. This is in correlation with a study titled 'Runner's knowledge of their foot type: Do they really know?' in which 49% of 92 runners were able to identify their foot type correctly. [13]

Motion control shoes, Cushion trainers, Stability shoes and Minimalist shoes are the different types of shoes available for different types of feet. Only 3 % of the target population were aware of all the shoe types.

Knowledge of the shoe selection and shoe replacement criteria is extremely important for any individual who is a runner. The various selection and replacement criteria were mentioned in the

questionnaire. While 22% of the runners knew all the essential selection criteria, none knew all the replacement guidelines.

Marathon runners and triathlon runners participated in the study, and had varied views on shoe replacement criteria, and removal of the shoe. Marathon runners stated that the wear and tear of the shoe is essential for replacement, while triathletes stated that shoes are to be replaced after completing 650 kms to 800 kms of running in the shoe.

Most of the marathon runners untie the laces of the shoes to remove them, while triathletes remove the shoes with the lace fastened, as they need to quickly start the swimming and cycling events.

Although, in this study 8% of the total study population were triathletes while the rest of them were marathon runners.

Hence, a conclusive comparison between the two athletic groups cannot be made in this study.

57% of the runners had not sustained any running injury. 43% of the target population stated that they have had running injuries, of which 40 % did not know if shoes could be factor for the injury. 34% of the injured runners did not co- relate their injuries with the shoe. 26% of the injured runners correlated their injuries with their shoes.

Studies have shown that running shoes cannot prevent injuries. Although, wearing the right shoes will prevent running injuries caused due to wearing improper shoes. [10-12]

### **Clinical Implication**

By increasing awareness about running shoes, shoe induced running injuries can be prevented and the athletes' performance can be enhanced.

Awareness can be created through workshops and campaigns for long distance runners. Running coaches can be trained regarding various aspects of shoe selection and replacement criteria and assessment of shoe and foot so that they can correctly guide runners regarding the same.

### **Future Scope**

Awareness of running shoes salespersons and running coaches can be assessed.

### **CONCLUSION**

Majority of the runners have scored averagely in the domains of Knowledge, Attitude and Practice. Majority also have an average total score in the questionnaire.

Hence, runners should be made aware of their foot structure, different types of shoes, shoe selection and shoe replacement criteria to prevent running injuries due to shoes and to improve their performance.

### **ACKNOWLEDGEMENTS**

I would like to express my gratitude to my guide, Dr Namrata Sidhaye- Bhadbhade (PT) for having guided me throughout the project.

I wish to acknowledge the assistance provided by the staff of DESBJCOP, Pune to validate the questionnaire of my research project.

Mr.Sagar Khandagale offered valuable data and statistics for the study.

I extend special thanks to Mr. Mahesh Gavhane, the race director for the LSOM marathon, Pune, Mr. Kanad Deshmukh and Mr. Govind Arun Kamat for having given me permission to conduct the study on the participants of the above mentioned marathon.

I would also like to thank the organisers of the COEP marathon and Mr. Vidur Thakar, organiser of the Pro Bikes Triathlon for giving me permission to conduct the study on the participants of the respective events.

I also extend special thanks to Mr. Atul Kavitate for the technical support provided to document this study.

I finally wish to thank my family and friends for their valuable inputs and support for me to complete this project.

### **REFERENCES**

1. Promjun S, Sahachaisaeree N. Factors determining athletic footwear design: A case of product appearance and functionality. *Procedia Soc Behave Sci*. 2011 Jun; 36(2012):520-528.
2. Kinard S, Stewart C, Fitzhugh R. Wearing the wrong fitting shoe can cause serious injury. *Foot and ankle assoc*. 2014 Nov
3. Andersen JJ. The state of running 2019. 2020 Jan 3

4. Andersen JJ, Nikolova V. Marathon statistics 2019 worldwide (Research).2019 Jun4
5. Fuller J, Bellenger CR, Thewlis D, Tsiros M. The effect of footwear on running performance and running economy in distance runners. SportsMed. 2014 Nov; 45(3).
6. Cornwall MW, McPoil TG, Lebec M, Vicenzino B, Wilson J. Reliability of the Modified Foot Posture Index. J Am Podiatr Med Assoc. 2008 Jan; 98(1): 7-13.
7. Redmond A.C., Crane,Y.Z, Menz H.B. Normative values for the Foot Posture Index. J Foot Ankle Res 2008 Jul; 1,6
8. www.brannock.com
9. van Gent RN, Siem D, van Middelkoop M, van Os AG, Bierma-Zeinstra SMA, Koes BW. Incidence and determinants of lower extremity running injuries in long distance runners: A systematic review.Br J Sports Med.2007 May; 41(8):469-480.
10. Nigg BM, Baltich J, Hoerzer S, Enders H. Running shoes and running injuries: myth busting and a proposal for two new paradigms: ‘preferred movement path’ and ‘comfort filter’. Br J Sports Med. 2015 Jul; 49(20):1290-1294.
11. Oregon State University. Maximal running shoes may increase injury risk to some runners. Science Daily. 2018 Jun.
12. Ryan M, West J-Newsham R, Tauton JE, Elashi M. Examining injury risk and pain perception in runners using minimalist footwear. Br J Sports Med. 2014 Dec; 48(16):1257-1262
13. Hohmann E, Reaburn P, ImhoffA.Runner's knowledge of their foot type: Do they really know? The Foot. 2012 Sep; 22(3): 205-210.

How to cite this article: Suresh G, Sidhaye-Bhadbhade N. Knowledge, attitude and practice of recreational long-distance runners towards using running shoes: a survey. Int J Health Sci Res. 2020; 10(9):365-370.

\*\*\*\*\*