

# A Study on Parts of the Body Exposed for the Running Injury and Various Over Demographic Characteristics of Athletes in Ethiopian First Division Athletics Clubs

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**Abstracts:** *This study is conducted with the ultimate objective of identifying parts of the body frequently exposed for the running injury in Ethiopian first division athletics club. This paper is focused on mainly the prevalence of injury of running events in short distance, middle distance and long distance running. The study adopted the descriptive survey research design. The target population for the study comprised athletes in Ethiopian first division athletics club. Two-stage sampling were used to obtain sample size first simple random sampling then Systematic sampling technique was used to obtain the sample size. The study selected 180 athletes, for questionnaires. The Statistical Package for Social Sciences (SPSS) was used to code and analyze the data. The study results revealed that parts of the body frequently exposed for running injury are Ankle, Achilles tendon, foot toe and knee are mostly exposed for running injury while shoulder, back, foot palm and foot nail are least exposed for running injury. As a result, the researcher has recommended creating the awareness for athletes to know the body parts frequently exposed for running injury and education on benefits.*

**Keywords:** Athletes, Injury, Running

## 1. Introduction

Injury is an unfortunate risk that, according to most coaches, athletes, and medical practitioners, are an unavoidable part of athletics. Most athletes that participate in high-level sports experience some type of injury during their athletic careers. Ironically, despite significant advances in the science of coaching, improvement in coaching techniques, technological progress in the design of athletic equipment, protective devices and facilities, the incidence of sports injury has actually increased during the past 15-20 years (Orchard and Powell 2003). Clear conceptualization of the term "injury" is needed in order to fully appreciate the existing research and clinical practice dealing with injured athletes. Accordingly, in the following text, a number of approaches to defining athletic injuries will be outlined and discussed. It should be noted that diversity in definitions of the term "sports injury" is apparent in the literature and probably accounts for some disagreements in reported research findings (Rambusch, Jakobsson et al. 2007).

Many believe that running injuries result from a combination of extrinsic factors (training errors, old shoes, running surface) and intrinsic factors (poor flexibility, misalignment, anthropometry previous injury, running experience). Large databases of specific running injuries have been relatively scarce. Although they are unable to accurately determine incidence or prevalence per se such extensive collections prove useful in providing a measure of frequency of occurrence of specific injuries. Potential risk factors may be analyzed and odds ratios computed, based on data provided through retrospective chart review. These data may be compared with similar analyses at the same sports medicine center to monitor potential changes in the frequency of

occurrence of certain injuries over time. (J E Taunton and M B Ryan)

Running as an exercise can strengthen the limbs, develop the lungs, exercise the will and promote the circulation of the blood. The clothing should be light, the head bare and the neck uncovered. Care must be taken not to overdo." (Scientific American, 1883)

One of the major challenges in competitive sports is to maintain fitness among the athletes. Maintenance of fitness means, in addition to preventing injuries, handling the injuries that still occur and rehabilitating the sportspersons in a safe way to prevent recurrence. To be able to effectively plan these actions, the injury pattern in a specific sport has to be known (Almén, Jacobsson et al. 2012).

Risk factors for injury in any sport may be categorically divided into extrinsic or intrinsic. Static alignment measurements of leg length discrepancy femoral neck anteversion, knee genuvarum, valgum and recurvatum, excessive Q angle, patella alta, tibial torsion, increased ankle dorsi flexion, and excessive sub talar and forefoot varus have been proposed as potential intrinsic risk factors for running injury. In contrast with these observations, other studies did not find any association between running injury and measures of static lower limb alignment. Given the lack of agreement in the literature, the purpose of this study was to examine the relation between static measurements of lower limb alignment and the incidence of lower limb running injury in a prospective cohort study of recreational runners

## 2. Statements of the Problems

Ethiopia was the most potential area in the athletes from Africa specially the most dominant in long distance running in the world athletics competition. There were many problems related to running injury. Running injury affect different parts of the body like Shoulder ,Back ,Buttocks, Hip, Groin ,Upper leg (anterior), Upper leg (posterior) ,Knee ,Lower leg (anterior), Lower leg (posterior), Achilles tendon, Ankle, Foot toe, Foot palm, Foot nail. Many athletes were failing to come back to their profession because of injury before their normal retirement. Regardless of the facts above, the causes of running injury in Ethiopian first division Athletics clubs were due to lack of scientific training, redundancy of training and competition, lack of material and equipment, lack of track and field and lack of proper nutrition, fear of injury and the weak mechanisms taken to rehabilitate the injured athletes which lead to the long-term recovery and fail to come back to their profession. The researcher wants to identify which parts of the body are redundantly exposed for running injury and indicates the scientific recommendation to for which body parts give more attention to protect from injury.

## 3. Objectives of the Study

The general objective of the study is to investigate which parts of the body frequently exposed to injury practices in Ethiopian runners first division athletics clubs and the specific objectives of the study are:

- To assess the parts of the body of athletes frequently exposed to injury
- To examine the relationship between demography and injury.
- To indicate which body parts are needed for more care.

## 4. Hypothesis

The part of the body exposed frequently for running injury are the same among athletes' demography in Ethiopian first division athletics club's.

## 5. Methodology and Sample

### 5.1. Target Population of the study

Population is defined as a group of individuals, objects or items from which samples are drawn (Kombo and Tromp, 2006). On the other hand, Sommer & Sommer (1997) defined target population as all lists of a real or ideal set of subjects, people or events to which a researcher wishes to generalize the results of a study. The target population of the study is Ethiopian first division athletics club athletes. There are twelve first division athletics clubs in Ethiopia. The total number of athletics in the twelve clubs was 604. The distribution of the same was presented in Table 5.1.

**Table 5.1:** Distributions of athletes over different first division club in Ethiopia

S.No.	Name of the clubs	Total population
1	Oromia region athletic club	54
2	Oromia prison athletic club	46
3	Oromia police athletic club	49
4	Bosna athletic club	39
5	Defense athletic club	63
6	Bank athletic club	58
7	Federal police athletic club	55
8	ELPA athletic club	62
9	Debut police athletic club	48
10	Tigray region athletic club	42
11	Debut region athletic club	44
12	Amhara region athletic club	44
Total		604

### 5.2. Sample size and sampling techniques

Sampling is the process by which a number of individuals or objects are selected from a population, such that the selected group contains representative elements of characteristics in the entire group (Orodho and Kombo, 2002). In this study, the researcher used a two stage sampling technique were employed. In the first stage, 50% of the clubs were selected using Simple random sampling. Out of twelve clubs mentioned in Table 3.1, six clubs were selected (50 % of the total clubs). The clubs that were elected in the first stage are a Defense Athletics club, Banks Athletics club, Debut Region athletics club, Oromia region athletics club, Oromia Police Athletics club, and Ethiopian Electric power agency Athletics club (ELPA). The total number of athletics in the selected clubs could be 328 and by Krejcie and Morgan 1997 formula the sample size was determined as 180. The proportion of sample size out of the population size is  $(180/328) \times 100 = 54.8\%$ , approximately equal to 55 %. The same proportion of athlete was selected from each selected club using Simple random sampling without replacement. The selected sample in the first stage and sample sizes to be selected in the second stage are presented in Table 5.2

**Table 5.2:** Distributions of athlete in the selected sample in the first stage

S.No.	Name of clubs selected	Population	Sample
1	Defense athletics club	63	34
2	Banks Athletics club	58	32
3	Debut Region athletics club	42	23
4	Oromia Region athletics club	54	30
5	Oromia Police Athletics club,	49	27
6	Ethiopian Electric power agency (ELPA) Athletics club	62	34
Total		328	180

### 5.3 Source and methods of data Collection

The researcher used both primary and secondary data as the main sources. Secondary data were collected from the Ethiopian athletics federation documents, magazine, newspaper, Ethiopian athletics association documents and clubs documents library. The primary data were gathered using the structured questionnaire survey method. Which all 180 in number and a need to fill and return. Even after replying only 144 athletes filled completely and returned. Remain 36 were either partially filled or not returned at all.

5.4 Questionnaire design

In this study, the researcher used to structured questionnaires which primarily designed in English language and translated into local language by translator and further reviewed by language experts for final distribution. The questionnaire has composed of two parts: Part one questions were related to demographic characteristics and Part two covered part of the body frequently exposed for running injury. The questionnaires were self-administered questionnaires in which the respondents filled with their own since they were all literate. The five point Likert scale (not at all, rarely, sometimes, often, very often) questionnaire was designed and data about which body part was more exposed for running injury in practice of Ethiopian first division athletics clubs.

6. Data Analysis and Interpretation

Under this study, descriptive and inferential statistics were used in the data analysis. The data that were collected from athletes were analyzed in two parts in order to address the research question under study. Descriptive statistics deal with the development of certain indicators of the raw data to reach at some conclusion, whereas inferential statistics basically leads to a generalization of the results about the population.

In the process of applying inferential statistics One way ANOVA (Analysis variance) comparing the means of different groups of samples. Accordingly, it was used to analyze respondents' demographic characteristics to establish whether the variation between dependent and independent is likely to be a function of demographic variation or not.

7. Results and Discussion

Based on the respondents of all the 144 responding the number of respondents who applied different option like not at all, rarely, sometimes, often and very often against each part of the body exposed for running injury was presented in Table 7.1

Table 7.1: Frequency, percentage, mean and standard deviation

Part of the body		NA	R	ST	O	VO	M	SD
Shoulder	F	51	51	23	12	7	2.10	1.133
	P	35.4	35.4	16.0	8.3	4.9		
Back	F	30	19	58	15	22	2.86	1.923
	P	20.8	13.2	40.3	10.4	15.3		
Buttocks	F	21	22	54	29	18	3.01	1.203
	P	14.6	15.3	37.5	20.1	12.5		
Hip	F	17	17	37	55	18	3.28	1.185
	P	11.8	11.8	25.7	38.2	12.5		
Groin	F	16	9	26	24	69	3.84	1.377
	P	11.1	6.3	18.1	16.7	47.9		
Hamstring	F	13	5	26	35	65	3.85	1.275
	P	9.0	3.5	18.1	24.3	45.1		
Quadriceps	F	13	8	27	36	60	3.93	1.261
	P	9.0	5.6	18.8	25.0	41.7		
Knee	F	12	3	16	43	70	4.08	1.197
	P	8.3	2.1	11.1	29.9	48.6		
Lower leg anterior	F	11	5	18	61	49	3.92	1.137

	P	7.6	3.5	12.5	42.4	34.0		
Lower leg posterior	F	10	3	14	71	46	3.97	1.064
	P	6.9	2.1	9.7	49.3	31.9		
Achilles tendon	F	10	2	9	63	60	4.12	1.074
	P	6.9	1.4	6.3	43.8	41.7		
Ankle	F	9	2	7	38	88	4.35	1.079
	P	6.3	1.4	4.9	26.4	61.1		
Foot toe	F	9	7	9	32	87	4.26	1.169
	P	6.3	4.9	6.3	22.2	60.4		
Foot palm	F	16	51	35	20	22	2.87	1.242
	P	11.1	35.4	24.3	13.9	15.3		
Foot nail	F	42	41	33	13	15	2.43	1.283
	P	29.2	28.5	22.9	9.0	10.4		

Key: Not at all (NA), Rarely (R), Sometimes (ST), Often (O) Very often (VO), mean (M) & standard deviation (SD)

According to the respondents' injury occurred on the shoulder 51 (35.4%) were responded not at and rarely, 22 (15.3%) were responded sometimes while 12 (8.3%) were responded often and 7 (4.9%) were responding very often. The mean of the total respondents were 2.10 and standard deviation were 1.13 according to the respondents there are no injury because of running happened in the shoulder. Regarding on the question raised for back 30 (20.8 %) were responded not at all, 19 (13.2 %) were responded that rarely while 58 (40.3 %) were responded sometimes, 15 (10.4 %) were responded often and 22 (15.3 %) of the respondents were responding very often and the mean of 2.86 and the standard deviation were 1.923. The majority of respondents were responded sometimes running injury was happening in the back therefore, there has been rarely injured was occurring due to running in the back.

For the question raised related to in buttocks 21 (14.6 %) were responded not at all, 22 (15.3 %) were responded that rarely while 54 (37.5 %) were responded sometimes, 29 (20.1 %) were responded often and 18 (12.5 %) of the respondents were responding very often and the total mean of respondents were 3.01 and the standard deviation were 1.203. The majority of respondents were responded sometimes running injury was happening in the buttocks therefore sometimes injury due to running in the buttocks. Regarding on the question raised for hip 17 (11.8 %) was responded not at all, 17 (11.8 %) was responded that rarely while 37 (25.7 %) were responded sometimes, 55 (38.2 %) were responded often and 18 (12.5 %) of the respondents were responding very often and the total mean of respondents were 3.28 and the standard deviation were 1.185. The majority of respondents were responded often running injury was happening in the hip therefore, there was sometimes injury due to running in the hips.

Concerning on the question on groin 16 (11.1 %) was responded not at all, 9 (6.3 %) were responded that rarely while 26 (18.1%) were responded sometimes, 24 (16.7 %) were responded often and 69 (47.9 %) of the respondents were responding very often and the total mean of respondents were 3.84 and the standard deviation were 1.377. The majority of respondents were responding very often running injury was happening in the groin therefore there was a sometimes injury due to running in the groins. Regarding on the question raised for hamstrings 13 (9.0 %) was responded not at all, 5 (3.5 %) was responded that rarely while 26 (18.1 %) were responded sometimes, 35 (24.3 %) were responded often and 19 (13.2 %) were responded that rarely while 58 (40.3 %) were responded sometimes, 15 (10.4 %) were responded often and 22 (15.3 %) of the respondents were responding very often and the mean of 2.86 and the standard deviation were 1.923. The majority of respondents were responded sometimes running injury was happening in the back therefore, there has been rarely injured was occurring due to running in the back.

were responded often and 65 (45.1 %) of the respondents were responding very often and the total mean of respondents were 3.85 and the standard deviation were 1.275. The majority of respondents were responding very often running injury was happening in the hamstrings therefore there was sometimes injury due to running in the hamstrings. Concerning on the question on quadriceps 12 (8.3 %) was responded not at all, 3 (2.1 %) was responded that rarely while 16 (11.1%) were responded sometimes, 43 (29.9 %) were responded often and 70 (48.6 %) of the respondents were responding very often and the total mean of respondents were 3.93 and the standard deviation were 1.261. The majority of respondents were responding very often running injury was happening in the quadriceps therefore there was often injured due to running in the quadriceps. Regarding on the question raised for knee 12 (8.3 %) were responded not at all, 3 (2.1 %) were responded that rarely while 16 (11.1%) were responded sometimes, 43 (29.9 %) were responded often and 70 (48.6 %) of the respondents were responding very often and the total mean of respondents were 4.08 and the standard deviation were 1.197. The majority of respondents were responding very often running injury was happening in the knee therefore there was often injured due to running on the knee.

Concerning on the question on lower leg anterior 11 (7.6 %) was responded not at all, 5 (3.5 %) were responded that rarely while 61 (41.1%) were responded sometimes, 43 (29.9 %) were responded often and 70 (48.6 %) of the respondents were responding very often and the total mean of respondents were 3.92 and the standard deviation were 1.137. The majority of respondents were responding very often running injury was happening in the lower leg anterior therefore there was often injured due to running in the lower leg anterior. Concerning on the question on lower leg posterior a 10 (7.6 %) were responded not at all, 3 (2.1 %) were responded that rarely while 14 (9.7%) were responded sometimes, 71 (49.3 %) were responded often and 46 (31.9 %) of the respondents were responded often and the total mean of respondents were 3.97 and the standard deviation were 1.064. The majority of respondents were responding very often running injury was happening in the lower leg posterior, therefore there was a significant injury due to running in the lower leg posterior.

Regarding on the question raised for Achilles tendon 10 (6.4 %) was responded not at all, 2 (1.4 %) was responded that rarely while 9 (6.3%) were responded sometimes, 63 (43.8 %) were responded often and 60 (41.7 %) of the respondents were responding very often and the total mean of respondents were 4.12 and the standard deviation were 1.074. The majority of respondents were responding often running injury was happening in the Achilles tendon, therefore there was often injured due to running in the Achilles tendon. Concerning on the question on ankle 9 (6.3 %) was responded not at all, 2 (1.4 %) was responded that rarely while 7 (4.9 %) were responded sometimes, 38 (26.4 %) were responded often and 88 (61.1 %) of the respondents were responding very often and the total mean of respondents were 4.35 and the standard deviation were 1.079. The majority of respondents were responding very often running injury was happening in the ankle therefore there was often injured due to running in the ankle.

Concerning on the question on foot toe 9 (6.3 %) was responded not at all, 7 (4.9 %) was responded that rarely while 9 (6.3%) were responded sometimes, 32 (22.2 %) were responded often and 87 (60.4 %) of the respondents were responding very often and the total mean of respondents were 4.26 and the standard deviation were 1.169. The majority of respondents were responding very often running injury was happening in the foot toe therefore there was often injured due to running in the foot toe.

Regarding on the question on the foot palm 16 (11.1 %) was responded not at all, 51 (35.4 %) was responded that rarely while 35 (24.3%) were responded sometimes, 20 (13.9 %) were responded often and 22 (15.3 %) of the respondents were responding very often and the total mean of respondents were 2.86 and the standard deviation were 1.242. The majority of respondents were responding very often running injury was happening in the foot palm therefore there was rarely injured due to running in the foot palm. Regarding on the question raised in foot nail 42 (29.2 %) was responded not at all, 41 (28.5 %) was responded that rarely while 33 (22.9 %) were responded sometimes, 13 (9.0 %) were responded often and 15 (10.4 %) of the respondents were responding very often and the total mean of respondents were 2.43 and the standard deviation were 1.283. The majority of respondents were responded not at all running injury was happening in the foot nail therefore, there was no rarely injured due to running in the foot nail.

To know whether there is any statistical difference in facing injury to any part of the body among the different groups of athletes demography One way ANNOVA technique was applied and reveal are presented in Table 7.1

**Table 7.2:** ANOVA results of demographic character of athletes comparing between groups and within groups, significance and df

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
Gender	Between Groups	8.164	45	.181	.643	.950
	Within Groups	27.663	98	.282		
	Total	35.826	143			
Age	Between Groups	51.899	45	1.153	1.298	.143
	Within Groups	87.101	98	.889		
	Total	139.000	143			
Types of running	Between Groups	28.201	45	.627	.908	.634
	Within Groups	67.626	98	.690		
	Total	95.826	143			
Educational qualification	Between Groups	53.098	45	1.180	1.135	.297
	Within Groups	101.839	98	1.039		
	Total	154.938	143			
Running Experience	Between Groups	13.418	45	.298	.745	.864
	Within Groups	39.221	98	.400		
	Total	52.639	143			
Marital status	Between Groups	15.082	45	.335	.928	.603
	Within Groups	35.412	98	.361		
	Total	50.493	143			

From Table 7.2 it can be influenced that there was no any statistically significant difference demographic characteristics among groups of athlete's asp value are >.05 is all the cases. That is, facing injury on any part of the body is not depending on any of the demography of the athletes.

Further analysis was made by considering part by part of the body facing injury and try to see whether any significant variance is exist over different ways of the demography of athletes. Since they are fifteen part which frequently exposed for running injury. I made 15 ANOVA table and from that the demography of athlete which shows significant variation over different parts are only brought in this paper. Other combination are not significantly raying.

## 8. Summary and Conclusion

Running was not injury free. Injuries occur any time in any part of the body during or after competition or training because of a different causes of injuries. This paper intends to study, which body types are frequently exposed for running injury and found that injuries, mostly happened in the body were Ankle, foot toe, Achilles tendon and knee was the most exposed or very often for running injury. Lower leg posterior, quadriceps, lower leg anterior, hamstring, groin, was exposed for running injury often while hip and buttock, were exposed sometimes for running injury as and the foot palm, back, foot nail, shoulder were rarely exposed for running injury. Athletes should have to understand the proper way scientific running and use the right running shoe fit for their leg and pain-free running for asphalt, track, field, mountain and forest. It is very important for anyone related to running field to be aware about all kinds of running injuries; causes, symptoms, prevention and treatment, in order to manage an injury prevention program. Educate the athletes to take enough rest and sleep, proper nutrition, rehydration using the right environment for training and competition. Create awareness about their body parts, to know which body parts need more attention and exposed frequently for running injury.

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