

MUSCLE INJURIES IN FOOTBALL: COMPARISON THROUGH ONE WAY ANALYSIS OF VARIANCE (ANOVA)

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Abstract: The primary aim of the present study was to compare the occurrences of Muscle injuries among three level of football player. The investigator has made an attempt to classify or define the groups of footballers based on the class of the games of the footballers. Accordingly three groups of footballers were targeted; International, National and State footballers aged between 14 to 30 years, information of occurrences of injuries was collected, Individually through a questionnaire from footballers. The International Football players was found to have got more suffered from Muscle injuries as compared to National and state level football Players.

INTRODUCTION

Muscle is **contractile tissue grouped into coordinated systems** for greater efficiency(<https://www.britannica.com/science/muscle>). In humans the muscle systems are classified by gross appearance and location of cells (<https://www.britannica.com/science/muscle>). Sports injuries can occur due to overtraining, lack of conditioning, and improper form or technique. Failing to warm up increases the risk of sports injuries. Bruises, strains, sprains, tears, and broken bones can result from sports injuries(<https://medbroadcast.com/condition/getcondition/sports-injuries>). Sports related injuries are most commonly caused by **poor training methods**; structural abnormalities; weakness in muscles, tendons, ligaments; and unsafe exercising environments. The most common cause of injury is poor training. For example, muscles need 48 hours to recover after a workout ((Davis C.P 2021),).

Muscles in the quadriceps, the calves, hamstrings, groin, low back, and shoulder are the most common sites for muscle injuries. human muscle system, the muscles of the human body that **work the skeletal system**, that are under voluntary control, and that are concerned with movement, posture, and balance(<https://www.britannica.com/science/human-muscle-system>).

METHODS

Total 300 male competitive footballers; 100 out of International players, 100 National players and 100 State groups football players from different Clubs, Academy, State and University were selected as a subject for the present study. Inter-varsity footballers have been considered as national players. Their age ranged from 14 to 30 years.

Some questionnaires were sent to different Club, Academy, State and University who had participated in International, National, State and Inter-varsity tournament and some cases contacting footballer at the venue of State, University, and National tournament held at different places. Instructions were given to the footballers before filling these questionnaires by the researcher, football coach and football experts.

For the present study, modified questionnaires prepared investigator was utilized after the test -retest reliability was found out 0.94 by the researcher. investigators only consider the numbers of injuries occurred during match playing and training period within one year The statistical computation of data of the present study is used by using SPSS package in the computer.

The result computed also cross checked by using following statistical variables. Means, Standard deviations, one way analysis of variance and Scheffee post hoc test were utilized to compare and identify the occurrences of injuries among footballers.

RESULTS AND DISCUSSION

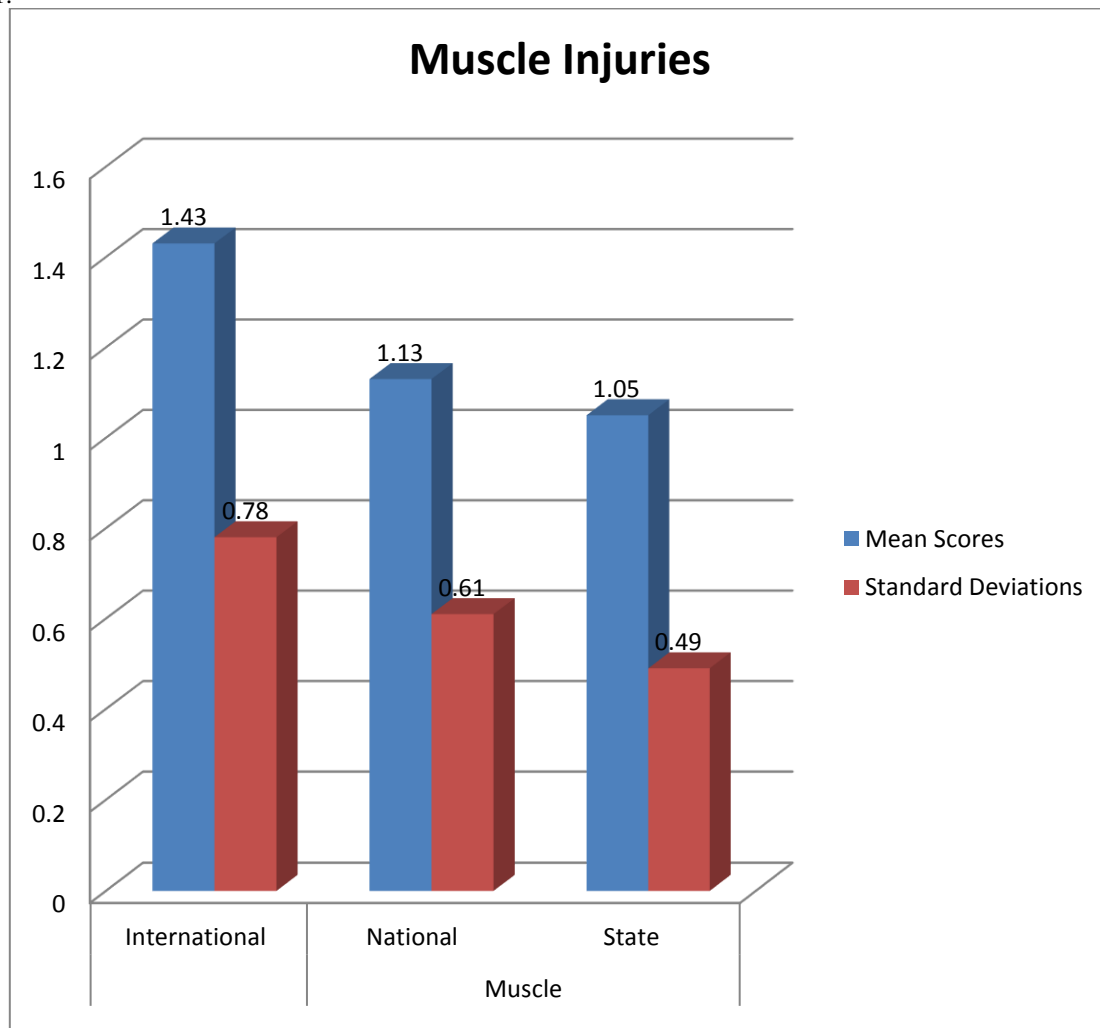
Table – 1

Mean scores and Standard Deviations of occurrences of injuries with respect to Muscle

Sr.No.	Injuries	Footballers	Number (No. of Injuries)	Mean Scores	Standard Deviations
1	Muscle	International	30 (43)	1.43	.78
		National	32(36)	1.13	.61
		State	37(39)	1.05	.49

Table-1, shows that the mean scores and standard deviations of occurrences of injuries with respect to nature among three groups of competitive footballers. The mean scores (S.D.) of muscle injuries to International groups footballers was 1.43 (.78), national groups footballers was 1.13 (.61) and state groups footballers was 1.05 (.49). The mean scores (S.Ds.) of Ligament injuries to international groups footballers was 1.30 (.56), national groups footballers was 1.08 (.41) and state groups footballers was 1.07 (.39). Mean scores (S.Ds.) of Fracture to international groups footballers was .92 (.28), national groups footballers was 1.1 (.29) and state groups footballers was 1.07 (.30). The mean scores (S.Ds.) to Tendon injuries of international groups footballers was 1.12 (.38), national groups footballers was 1.25 (.43) and state groups footballers was 1.23 (.42).

Mean scores of occurrences of injuries with respect to Muscle have been depicted graphically through histogram in figure-1.



In order to find out the statistically significant difference of occurrences of injuries with respect to Muscle among three groups of competitive footballer; ANOVA was applied the results of which is presented in Table 5.40

Table -2

Analysis of Variance of occurrences of injuries with respect to Muscle among three groups of competitive footballers.

Sr. No.	Injuries	Source of Variance	DF	SS	MSS	F-ratios
1.	Muscle	Between groups	02	2.54	1.27	5.52 *
		Within groups	96	22.15	.23	

* Significant at .05 level

NS = Not Significant

Table 2 shows, Analysis of Variance of occurrences of injuries with respect to Nature among three groups of competitive footballers.

In order to find out the statistically comparison of occurrences of injuries with respect to nature among footballers. F-ratio was computed for muscle. The data given in Table 5.40 shows that statistical significant difference was found in Muscle injuries (F=5.52, P<.05),

In order to locate the occurrences of Muscle injuries among three groups of competitive footballers; Scheffe post hoc test was used to statistically comprise the occurrences of Muscle injuries. Table 5.41 shows the possible comparison for three means

Table – 3

Scheffe post hoc statistical comparison for mean difference of Muscle injuries among three groups of competitive footballers.

Mean Scores				
International	National	State	Mean difference	C.D. at 5% level
1.43	1.13		.30	.29*
1.43		1.05	.38	.28 *
	1.13	1.05	.08	.27

* Significant at .05 level.

As per Table 3, shows that the Scheffe post hoc statistical comparison for mean difference of occurrences of Muscle injuries among three groups of competitive footballers.

DISCUSSION

Football is one of the most popular sports in the world. Currently FIFA Unifies 203 National associations and represents about 200 million active players of which about 40 million are women. The findings reveals that, It is an enjoyable and social sport than can be played from childhood to old age, either at a recreational level or as a competitive sports. Football playing largely involves starting, running, stopping, twisting, jumping, kicking, and turning movements that place the players to greater risk of injury. Statistically significant difference of occurrences of Muscle injuries was found between international and national groups competitive footballers; international groups footballers got having more Muscle injuries as compared to National Players. In addition, statistically significant difference of occurrences of Muscle injuries was found between international and state groups footballers; state groups' competitive footballers got having less Muscle injuries as compared to international groups' footballers. Furthmore No statistically significant difference of occurrences of Muscle injuries was found between national and state groups footballers. Muscle lesions are the most common category of injuries in athletes and comprise approximately 10% to 55% of all injuries (Beiner JM, Jokl P, 2001, Garrett,1996, Hakim et.al 2005). Muscle injuries are extremely common in athletes and often produce pain, dysfunction, and the inability to return to practice or competition (Delos D, Maak T.G, and Rodeo S.A ,2013), The majority of muscle injuries (>90%) are contusions or strains, while lacerations are much less common35. (Järvinen, Järvinen, Kääriäinen M, et al 2005). The most severe types can produce chronic pain, dysfunction, recurrence, and even compartment syndrome. A thorough understanding of these types of injuries is needed, since appropriate injury management may determine the difference between an early return to sport and a delayed return (Delos D, Maak T.G, and Rodeo S.A ,2013). The result of the study may helps the Sports Scientist and Administrators to enable them to for mutate a better procedure to minimize the occurrence of injuries to e footballers. This research will provide valuable information for a better understanding of injuries situation in football.

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