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KNOWLEDGE AND AWARENESS ABOUT ACL TEAR AMONG NON-PROFESSIONAL FOOTBALL PLAYERS IN SAUDI ARABIA

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Abstract

Background: The cruciate ligaments' main role is to stabilize the knee, and athletes as well as non-athletes are at high risk of rupture to these ligaments. The ligament in the front is called the anterior cruciate ligament (ACL). It is one of the main static and functional stabilizing structures of the knee, the one most commonly injured, and its reconstruction is frequently performed.

Objective: This study aimed to establish the prevalence of anterior cruciate ligament injuries and the knowledge and awareness of it among non-professional football players in Saudi Arabia.

Methodology: The present research was a cross-sectional assessment of data from a web-based questionnaire survey. The participants of the study are Non-professional athletes both male & female who are above 14 years old in all Saudi regions. The sample size was calculated using "Raosoft", sample size calculator. Based on 5% margin of error, 95% confidence interval, the estimated sample size was 384 participants.

Results: This study aimed to assess knowledge and awareness of ACL injuries among non-professional football players in Saudi Arabia, analyzing data from 496 participants. The findings revealed that 93.5% were aware of ACL injuries, yet only 10.7% felt very confident in preventing them. Knowledge gaps were evident, with just 55.2% correctly identifying knee instability as a symptom. Reliance on acquaintances (44.6%) and the internet (43.9%) as information sources was

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significant. Additionally, only 42.4% exhibited mild to high awareness of ACL-related concepts, highlighting a concerning lack of knowledge, particularly influenced by regional, employment, and educational factors.

Conclusion: While the present study highlights a significant awareness of ACL injuries among non-professional football players in Saudi Arabia, it also underscores critical gaps in knowledge and understanding of prevention strategies.

Keywords: Knowledge, awareness, anterior cruciate ligament, injury.

Introduction:

Injuries have a significant impact on professional football players' performance [1]. ACL injuries can be a serious sports injury with long-term repercussions [2]. The cruciate ligaments' main role is to stabilize the knee, and athletes as well as non-athletes are at risk of rupture to these ligaments. The ligament in the front is called the ACL. It is one of the main static and functional stabilizing structures of the knee, the one most commonly injured, and its reconstruction is frequently performed [3]. The results of a prior cohort study from Finland revealed that among individuals with the average age of 22 years, the probability of ACL injury was 60.9 for each 100,000 person-years [4]. Recent estimates put the rate of anterior cruciate ligament rupture among young athletes who participate in sports at around 400 per 100,000 person-years in teenagers. This rate has been continuously rising, especially among female athletes [5]. ACL injuries are extremely common globally; based to some research, there are approximately among 32 and 78 ACL repairs for each hundred thousand individuals per year. The quantity of cases performed has also risen recently, depending on multiple studies [6] in the same sport, women are apparently 2–10 times more at risk than men. ACL injuries in females are rapidly increasing due to the high risk of injury and rising rate of participating in sports between the girls and young adult women at the past thirty-year [7]. There are gaps in the general public's knowledge of risk factors other than sports, dangerous behaviors that increase the incidence of ACL injuries, and the distinctive symptoms of ACL injuries, according to two studies conducted in Albaha city and the Aseer region of Saudi Arabia. Increased health education, greater public awareness, and the introduction of ACL injury prevention programs are all urgently needed [8]. Although the incidence rate of ACL tears worldwide is unknown, certain studies indicate that there are 100,000–200,000 instances on average per year in the United States (US). According to another study, 80,000–

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100,000 ACL reconstruction surgeries are performed on average in the US each year. Additionally, it has been shown that the occurrence of ACL tears varies according to various demographic characteristics, such as age, gender, career, ethnicity, etc. For instance, ACL rupture events were seen more commonly in late adolescent athletes in a study, likely due to insufficient cartilage, while young athletes are more likely to suffer from avulsion fractures than ligament injuries. Additionally, compared to men, women are thought to be more vulnerable to ACL tears [9]. A prospective study of sports-related injuries was undertaken over a 12-month period at King Fahd University Hospital in Al Khobar, Eastern province of Saudi Arabia, and knee injuries made up the bulk of cases (27% of injuries overall). The most common sport activity linked to knee injuries is soccer [10]. According to studies, nearly 80% of ACL accidents are caused by low-velocity non- contact damage. Only a focused review of the history and clinical examination could diagnose an ACL injury without additional evaluation. The Lachman test can evaluate the damage process with a sensitivity of 93.5%, but test accuracy improves with anesthesia, especially in females. Additionally, magnetic resonance imaging (MRI), which has a sensitivity and precision of 86% and 95%, respectively, and an accuracy of 93%, is the most often used imaging technique to validate the diagnosis. ACL restoration is typically mentioned for adolescents and other people who decide to resume their pre-injury activities [11]. In relation to the apparent increase in ACL injuries in various nations and the lack of data and research on these injuries that affect Saudi Arabia's non-athletic population, it is crucial to ascertain whether Saudi Arabia shares the same issue as these other nations in order to comprehend the existence of this problem [12]. We acknowledge the necessity of examining what is known and what is required to establish a foundation for efficient injury risk assessment in order to address the knowledge gaps regarding ACL damage in the non-athletic population of Saudi Arabia [13].

Objective:

This study aimed to identify prevalence of anterior cruciate ligament injuries and the knowledge and awareness of it among non-professional football players in Saudi Arabia.

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Materials and Methods:

Study design:

The present study was a cross-sectional assessment of data from a web-based questionnaire survey. The participants of the study about knowledge & awareness of ACL are Non-professional athletes both male & female who are above 14 years old in all Saudi regions.

Inclusion and Exclusion criteria:

The inclusion criteria for this study are as follows: All people who play football non-professionally and live in Saudi Arabia with the age of 14 and above are included. All people who live outside Saudi Arabia, children under the age of 14 and professional football players in Saudi Arabia are excluded.

Sample size:

The sample size was calculated using "Raosoft", a sample size calculator. Based on a 5% margin of error, and 95% confidence interval, the estimated sample size was 384 participants.

Method for data collection and instrument (*Data collection Technique and tools)*:

The survey tool was developed as a self-administered questionnaire to ensure the participants confidentiality and ease of completion. It consists of a series question in Arabic covering important aspects that related to anterior cruciate ligament. To encourage high response rates, the questionnaire was made to be clear and simple. It aimed to determine the knowledge and awareness about anterior cruciate ligament (ACL) tear among non-professional football players in Saudi Arabia. The survey tool focuses on understanding participants' familiarity with manifestations of anterior cruciate ligament, risk factors and their interest in further education in anterior cruciate ligament injuries. Therefore, the purpose of this questionnaire is to gather valuable insights to raise the awareness and improve the quality of anterior cruciate ligament injuries care.

Scoring system:

The questionnaire includes socio-demographic information about the participants such as age, gender, nationality, and place of residence. The survey also asked about general knowledge of ACL injury among the non-professional football players in Saudi Arabia population.

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There are 23 questions In our survey. Knowledge & awareness questions are 12. one score to the correct answer and zero score to the incorrect answer. Total of 12 questions: Maximum score: 30, Minimum score: 0. **High level** (80% or more): 24 point or more. **Moderate level** (60% to 80%):19-23 points. **Low level** (59 or less): 18 points or less.

Results:

Table (1) displays various demographic parameters of the participants with a total number of (496). Age distribution confirms a high proportion of young people, 53.6% are in the 18–24-year age group, indicating a possible target group and possibly emphasis of youth views and experiences. The gender representation is strongly male (81.5%) biased, implying that the presented findings may not adequately portray female points of views contributing to reducing generalizability of the data. Single marital status is predominant (87.9%) consistent with a young demographic pattern and geographic distribution shows an over concentrated feature in the Western region (54.6%) that could reflect regional socioeconomic dynamics. In terms of employment status, a large student presence (56.7%) is reflected through where the student might be in their lives, either as an academic or transitional phase. The proportion of students, as well as the dominant level of education, is at the bachelor's degree level, which matches the level of most students. They comprise the final labor group with a survey result of 64.3% reporting a monthly income of less than $5000, which indicates in a sense socio-economic problem faced by this population, demanding further investigation into how such economic issues could affect their well-being.

Table (1): Sociodemographic characteristics of participants (n=496)

Parameter		***No.***	***Percent (%)***
Age	Less than 18	37	7.5
	18 to 24	266	53.6
	24 to 30	150	30.2
	30 to 40	28	5.6
	More than 40	15	3.0
Gender	Female	92	18.5
	Male	404	81.5
Marital status	Married	60	12.1
	Single	436	87.9
Region	Northern region	55	11.1
	Southern region	18	3.6
	Central region	97	19.6
	Eastern region	55	11.1
	Western region	271	54.6
Working status	Student	281	56.7

ISSN:1624-1940
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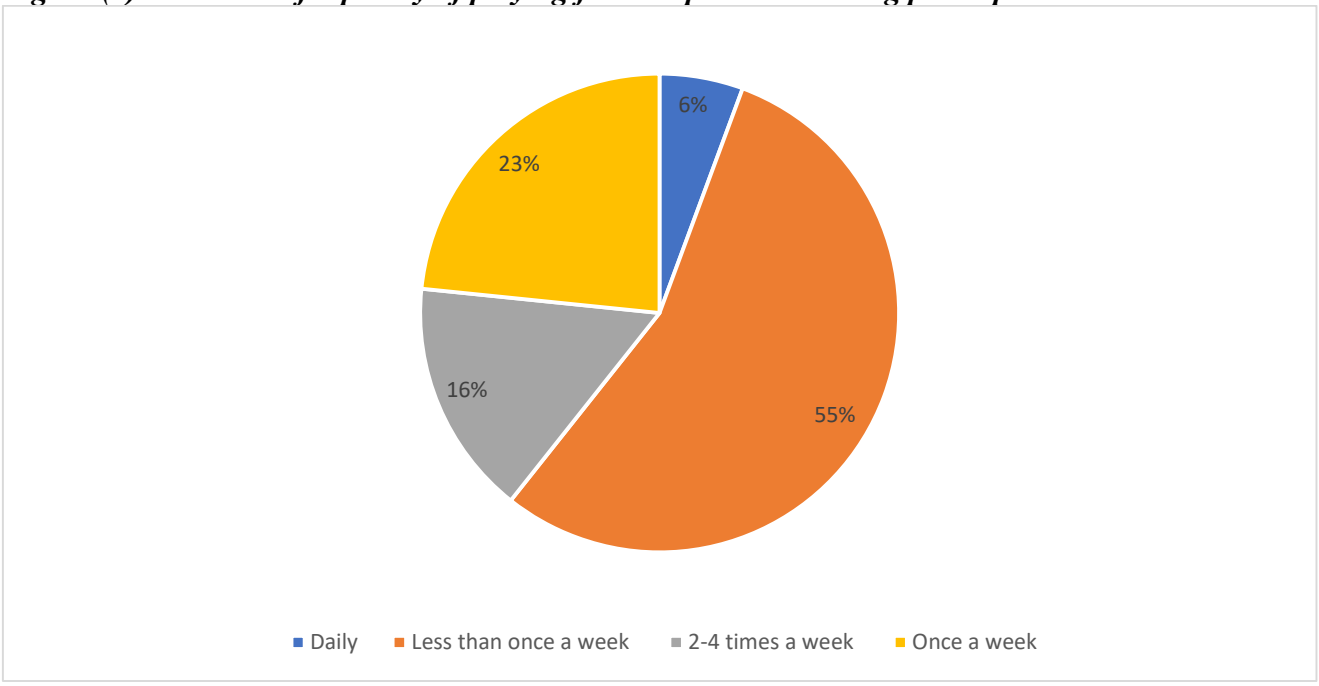
	Employed	147	29.6
	Unemployed	44	8.9
	Retired	2	.4
	Others	22	4.4
Educational level	Primary school	4	.8
	Middle school	23	4.6
	Secondary school	146	29.4
	Diploma	37	7.5
	Bachelor's degree	272	54.8
	Postgraduate degree	12	2.4
	I don't have academic qualification	2	.4
Monthly income	Less than 5000	319	64.3
	5000 to 10000	75	15.1
	10000 to 15000	39	7.9
	More than 15000	63	12.7

As shown in figure 1, The frequency with which these individuals partake in football is extracted from a sample of 496 respondents and provides significant conclusions. A major majority (55.0% or 273 participants) reported that they play football less than once a week, suggesting a strong tendency towards low levels of football participation. However, we found that 22.9 per cent (116 respondents) played once a week, 15.9 per cent (79 individuals) three to four times a week, while only 15.2 per cent (72 respondents) played five to six times a week, and 10.6 per cent (49 respondents) up to 11 and over. It is worth noting that only 5.6 per cent (28 participants) play football daily, depicting a relatively low degree of daily commitment to the sport.

Figure (1): Illustrates frequency of playing football per week among participants.



ISSN:1624-1940
http://magellanes.com/

Table 2 presents some insight parameters about knowledge and awareness of anterior cruciate ligament (ACL) injuries, among non-professional football players of 496 individuals. Also, it's quite notable that 93.5 percent of all respondents know of ACL injuries, showing a high level of how well they know about them. However, even with this awareness, it's not good enough; only 10.7 percent say they are 'very confident' in their ability to avoid these injuries. Acquaintances and internet were sources of information in working with ACL injuries in that 44.6% of the respondents' scored acquaintances while 43.9% scored internet. This implies that social networks and digital platforms were the primary sources of providing health information. Additionally, the results show that most participants (64.9%) believe that the risk of ACL injuries is associated with poor warm-up practice (n = 195), and most (65.3%) agree that incorrect motion during exercise is a contributing factor (n = 197).

Table (2): Parameters related to knowledge and awareness about ACL tear among non-professional football players (n=496).

Parameter		***No.***	***Percent (%)***
How frequently do you play football per week?	Daily	28	5.6
	Less than once a week	273	55.0
	2-4 times a week	79	15.9
	Once a week	116	23.4
How long have you been playing football?	Less than 5 years	133	26.8
	5-10 years	88	17.7
	11-15 years	128	25.8
	16-20 years	78	15.7
	More than 21 years	69	13.9
Have you ever heard of an anterior cruciate ligament injury (ACL)?	No	32	6.5
	Yes	464	93.5
What is the source of your information about anterior cruciate ligament injury? *	From a previous anterior cruciate ligament injury	68	13.7
	One of my acquaintances injured the anterior cruciate ligament	218	43.9
	During a discussion with a relative	99	19.9
	From a sports trainer	66	13.3
	from studies and books	114	22.9
	From the television	176	35.5
	From the internet	221	44.6
	From a hospital poster or leaflet	20	4.0
	From an awareness campaign	25	5.0
	More	47	9.5
Do you think the anterior cruciate ligament injury is serious?	No	40	8.1
	Yes	410	82.7
	I don't know	46	9.3
	Very confident	53	10.7

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How confident are you in your ability to prevent ACL injuries while playing football?	Somewhat confident	100	20.2
	Neutral	221	44.6
	Not very confident	78	15.7
	Not at all confident	44	8.9
From your point of view, which of the following factors causes injury to the anterior cruciate ligament? You can choose more than one answer *	sports activities	382	77.0
	Traffic accident	143	28.8
	gaining weight	146	29.4
	lifting heavy objects	110	22.2
	Several reasons combined	201	40.5
	Don't know	22	4.4
In your opinion, which of the following behaviors during exercise can cause an ACL injury? You can choose more than one answer. *	lack of awareness of protective countermeasures	267	53.8
	Not warming up	322	64.9
	Poor physical fitness	181	36.5
	incorrect motion when performing the exercise	324	65.3
	Excessive exercise	129	26.0
	physical collision	206	41.5
	Unsuitable shoes or floor	151	30.4
	Don't know	22	4.4
From your point of view, which of the following factors and/or behaviors that we do in our daily lives increase the risk of anterior cruciate ligament injury? You can choose more than one answer. *	Standing for prolonged periods of time	145	29.2
	Walking for long distances	85	17.1
	Sitting for prolonged periods of time	112	22.6
	Going up and down stairs frequently	93	18.8
	Get up from a sitting position	102	20.6
	Bowing	21	4.2
	Running	111	22.4
	Doing exercise	191	38.5
	Aging	124	25.0
	Don't know	102	20.6

****Results may overlap***

As shown in figure (2), Survey results on perceived importance of various treatment options for anterior cruciate ligament (ACL) injuries, as perceived by a total sample of 496 respondents show interesting trends in public opinion. We find that surgeries emerged as the most prominent option, yielding 250 responses or 50.4% of the total sample. Instead, 174 people, or 35.1%, opted for physiotherapy. Herbs and alternative medicine were used by about 20 respondents, making, however, about 4% of the total. A mere 18 people, about 3.6%, used medicines to select their treatments. What is interesting is that a large share of respondents answered 'uncertain', 34 out of the 507 participants or approximately 6.8% indicating uncertainty about possibilities of ACL treatment modes.

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Figure (2): Illustrates what is the most important in the complete treatment of ACL among participants.

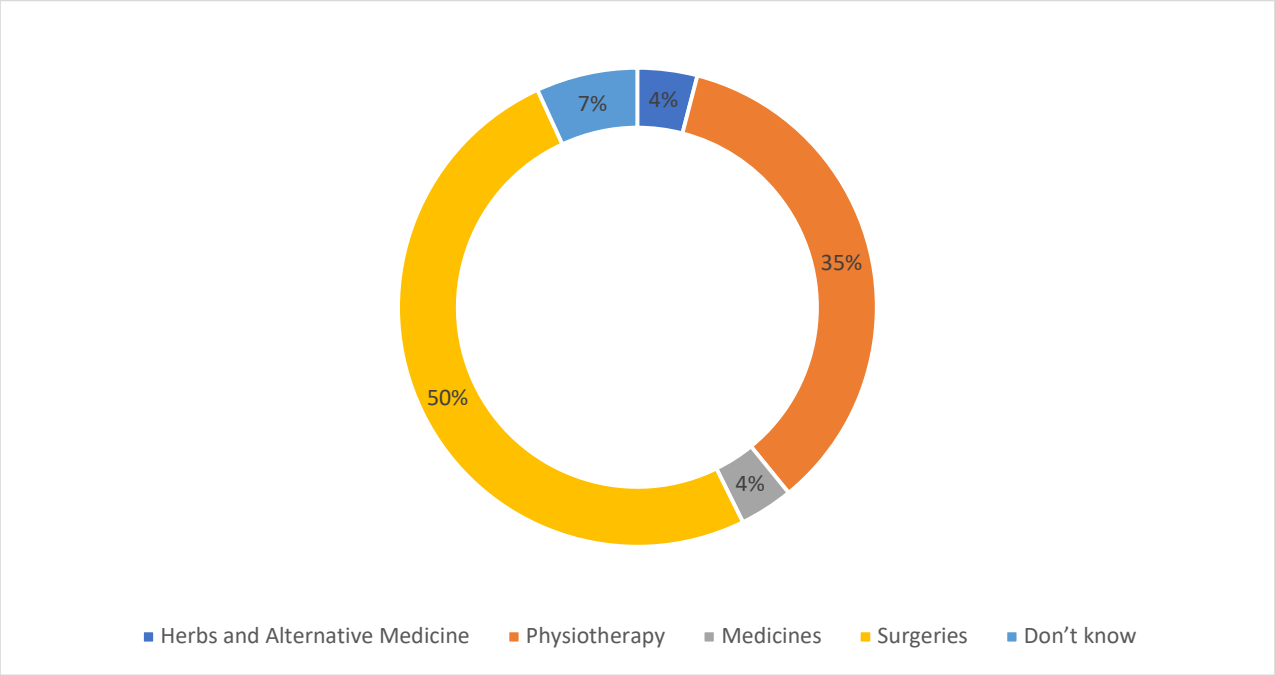

Table 3 provides a summed-up picture of the available knowledge and awareness regarding anterior cruciate ligament (ACL) injury among nonprofessional football players and provides a demystification of common and false perceptions about the injury. Just some 55.2 percent of participants were correct in recognizing knee instability as an indication of an ACL tear, a reasonable understanding of the issue, yet a sizable minority were left not knowing the signs, with 11.5 percent answering, 'don't know.' We found that two commonly used approaches to the relief of ACL symptoms – traditional rest (54.0%) and ice (53.4%) - had a strong reliance upon them, while 11.5% still applied to alternative medicine, perhaps reflecting a lack of trust in conventional treatments. The data also reveal strong belief in the need for surgical intervention, evidenced by 50.4% rating surgical intervention as the most important component of treatment and 90.3% confirmation that after surgery patients must be physically rehabilitated.

Table (3): participants' knowledge and awareness about ACL tear among non-professional football players (n=496).

Parameter		***No.***	***Percent (%)***
Which of the following symptoms do you think an ACL sufferer might have? You can choose more than one answer. *	Leg weakness or leg numbness	195	39.3
	Swelling and redness of the knee	214	43.1
	Knee instability	274	55.2
	Knee stiffness	132	26.6
	locked knee	77	15.5
	Knee popping sounds	148	29.8
	Severe knee pain	262	52.8

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	Don't know	57	11.5
In your opinion, which of the following relieves symptoms of an ACL injury? You can choose more than one answer. *	Resting and not moving	268	54.0
	Putting ice on the injury site	265	53.4
	Applying hot compresses to the site of the injury	88	17.7
	Herbs and alternative medicine	57	11.5
	Painkillers taken from the pharmacy without a prescription	51	10.3
	Painkillers prescribed by a specialist	264	53.2
	Don't know	50	10.1
From your point of view, which of the following is the most important in the complete treatment of the anterior cruciate ligament?	Herbs and Alternative Medicine	20	4.0
	Physiotherapy	174	35.1
	Medicines	18	3.6
	Surgeries	250	50.4
	Don't know	34	6.9
In your own opinion, how long does it usually take to heal an ACL injury?	1-2 months	45	9.1
	3-5 months	88	17.7
	6-9 months	274	55.2
	10- 12months	89	17.9
From your point of view, do you think postoperative physiotherapy is important?	No	24	4.8
	Yes	448	90.3
	I don't know	24	4.8
In your opinion, which of the following is a diagnosis of an anterior cruciate ligament injury? You can choose more than one answer. *	Taking patient's history	131	26.4
	Clinical examination of the patient	189	38.1
	x-ray	168	33.9
	CT scan	157	31.7
	MRI	244	49.2
	Don't know	77	15.5
In your opinion, is it possible to coexist with an anterior cruciate ligament injury?	No	82	16.5
	Yes	321	64.7
	I don't know	93	18.8

Results may overlap

Table 4 shows that the level of knowledge and awareness regarding anterior cruciate ligament (ACL) tears in non-professional football players is extremely revealing and conclusions about the prevalence of this injury are drawn. However, only 42.4 percent of respondents show high or mild awareness of the ranked keywords, and that is only 21.4 percent high level knowledge. In contrast, a big 57.7% of respondents had low awareness and knowledge.

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Table (4): Shows knowledge and awareness about ACL tear among non-professional football players score results.

	Frequency	Percent
High level of knowledge and awareness	106	21.4
Moderate knowledge and awareness	104	21.0
Low knowledge and awareness	286	57.7
Total	496	100.0

Table (5) shows that knowledge and awareness level about ACL tear has statistically significant relation to region of residence (P value=0.001), working status (P value=0.001), and educational level (P value=0.001). It also shows statistically insignificant relation to gender, age, marital status, monthly income, frequency of playing football per week, and duration of playing football.

Table (5): Relation between knowledge and awareness level about ACL tear among non-professional football players and sociodemographic characteristics.

Parameters		*Knowledge and awareness level*		*Total (N=496)*	*P value**
		High or moderate knowledge and awareness	**Low knowledge and awareness**		
Gender	Female	34	58	92	0.247
		16.2%	20.3%	18.5%	
	Male	176	228	404	
		83.8%	79.7%	81.5%	
Age	Less than 18	14	23	37	0.533
		6.7%	8.0%	7.5%	
	18 to 24	121	145	266	
		57.6%	50.7%	53.6%	
	24 to 30	56	94	150	
		26.7%	32.9%	30.2%	
	30 to 40	13	15	28	
		6.2%	5.2%	5.6%	
	More than 40	6	9	15	
		2.9%	3.1%	3.0%	
Marital status	Married	19	41	60	0.074
		9.0%	14.3%	12.1%	
	Single	191	245	436	
		91.0%	85.7%	87.9%	
In which regions of Saudi Arabia do you live?	Northern region	11	44	55	0.001
		5.2%	15.4%	11.1%	
	Southern region	13	5	18	
		6.2%	1.7%	3.6%	
	Central region	43	54	97	

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		20.5%	18.9%	19.6%	
	Eastern region	22	33	55	
		10.5%	11.5%	11.1%	
	Western region	121	150	271	
		57.6%	52.4%	54.6%	
Working status	Student	135	146	281	0.001
		64.3%	51.0%	56.7%	
	Employed	54	93	147	
		25.7%	32.5%	29.6%	
	Unemployed	8	36	44	
		3.8%	12.6%	8.9%	
	Retired	2	0	2	
		1.0%	0.0%	0.4%	
	Others	11	11	22	
		5.2%	3.8%	4.4%	
Educational level	Primary school	4	0	4	0.001
		1.9%	0.0%	0.8%	
	Middle school	4	19	23	
		1.9%	6.6%	4.6%	
	Secondary school	75	71	146	
		35.7%	24.8%	29.4%	
	Diploma	9	28	37	
		4.3%	9.8%	7.5%	
	Bachelor’s degree	112	160	272	
		53.3%	55.9%	54.8%	
	Postgraduate degree	6	6	12	
		2.9%	2.1%	2.4%	
	I don’t have academic qualification	0	2	2	
		0.0%	0.7%	0.4%	
Monthly income	Less than 5000	137	182	319	0.433
		65.2%	63.6%	64.3%	
	5000 to 10000	27	48	75	
		12.9%	16.8%	15.1%	
	10000 to 15000	15	24	39	
		7.1%	8.4%	7.9%	
	More than 15000	31	32	63	
		14.8%	11.2%	12.7%	
How frequently do you play football per week?	Daily	10	18	28	0.356
		4.8%	6.3%	5.6%	
	Less than once a week	123	150	273	
		58.6%	52.4%	55.0%	
	2-4 times a week	35	44	79	
		16.7%	15.4%	15.9%	
	Once a week	42	74	116	
		20.0%	25.9%	23.4%	

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How long have you been playing football?	Less than 5 years	43	90	133	0.073
		20.5%	31.5%	26.8%	
	5-10 years	38	50	88	
		18.1%	17.5%	17.7%	
	11-15 years	57	71	128	
		27.1%	24.8%	25.8%	
	16-20 years	37	41	78	
		17.6%	14.3%	15.7%	
	More than 21 years	35	34	69	
		16.7%	11.9%	13.9%	

P value was considered significant if ≤ 0.05.

Discussion:

In the context of nonprofessional football players in Saudi Arabia, our study into the ACL is critical. The objective of the present study was to assess the incidence of ACL injuries and knowledge and awareness of such injuries in this population. Participants also showed a noticeable recognition of ACL injuries because 93.5% of them stated that they had heard of this type of injury. But neither did this awareness translate into confidence in prevention; just 10.7% felt 'very confident' in being able to prevent such injuries. This discrepancy underscores an important knowledge deficiency that corresponds to prior research indicating that although awareness of ACL injuries is widespread, there is a limited comprehension of preventive measures [14, 15].

The findings from this study echo findings from other regions, such as the Aseer region of Saudi Arabia, where the authors of other studies have documented lack of overall knowledge of ACL injuries in the general population [14]. For example, Alzahrani et al. conducted a study in which they emphasized greater public education on ACL injuries and that a large number of people were unaware of risk factors, symptoms relating to ACL injury [15]. This supports what we find, that a substantial proportion (57.7%) of participants had low awareness related to ACL injury. This is concerning, especially considering the increasing incidence of ACL injuries in different studies [16–17], including a systematic review of injury prevalence among young athletes [16, 17].

Additionally, the demographic data from the study revealed that a large number of respondents were students (56.7 per cent), which might constitute a one of a kind demographic of the population that are at the high risk of ACL injuries because of their involvement in sports. The results are in line with previous research finding young athletes, especially those engaged in high risk sports, are at greater risk for ACL injury [18, 19]. Moreover, our study also follows trends seen elsewhere in the literature whereby male participants dominate in sports related injury research, potentially perpetuating the

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belief that it is a 'masculine' injury or a phenomenon only affecting male athletes [20, 21].

Our study identified the sources of information for ACL injuries (mainly acquaintances (44.6%) and the internet (43.9%)) demonstrates how social networks and digital platforms have a vital role in the distribution of health information. This is particularly relevant since there is evidence that gaps in knowledge result from reliance on informal rather than professional medical sources [14, 15]. Out of the many times that individuals use nonprofessional sources for health information, many people make misconceptions about the nature of ACL injuries and their prevention as demonstrated by the high percentage of participants who actually incorrectly identified symptoms or treatment options [15, 14].

The study also revealed that while a majority of participants recognized poor warm-up practices (64.9%) and incorrect movements during exercise (65.3%) as risk factors for ACL injuries, there remains a concerning level of uncertainty regarding specific symptoms, with 11.5% of respondents unsure about the signs of an ACL tear. This lack of clarity is echoed in the literature, where studies have shown that athletes often misinterpret the signs of injury, leading to delayed treatment and increased risk of further damage [18, 15]. Furthermore, the reliance on traditional methods of symptom relief, such as rest and ice, with a notable skepticism towards conventional treatment methodologies, suggests a need for improved education on the importance of seeking professional medical advice following an injury [15, 14].

Knowledge on ACL injuries was very low despite the high level of reported awareness, as participants scored only 21.4% on a high level of knowledge. This finding coincides with previous findings which show that awareness does not always mean understanding [14, 15]. Additionally, there is a positive relation between knowledge levels and demographic variables including region of residence, employment status by education, and educational level [15, 14], suggesting the need for target educational interventions to fill those gaps.

Also, the present study must be acknowledged for its limitations. Cross sectional design is useful to assess knowledge and awareness at one point of time in time but not helpful to establish the causal relationship. Furthermore, reliance on self-reported data may also involve bias due to participants' overestimation of their knowledge or awareness of ACL injuries.

Conclusion:

In conclusion, while the present study highlights a significant awareness of ACL injuries among non-professional football players in Saudi Arabia, it also underscores critical gaps in knowledge and

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understanding of prevention strategies. The findings suggest an urgent need for enhanced educational initiatives aimed at improving awareness and understanding of ACL injuries, particularly among young athletes. Future research should focus on longitudinal studies that assess changes in knowledge and awareness over time, as well as the effectiveness of targeted educational interventions in reducing the incidence of ACL injuries.

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Ethical approval
An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

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Conflict of interests
The authors declare that there are no conflicts of interest.

Informed consent:
Written informed consent was obtained from all individual participants included in the study.

Data and materials availability
All data associated with this study are present in the paper.

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