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Lower Back Pain in Athletes and Non-Athletes; A Group Comparison of Risk Factors and Pain Management

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ABSTRACT

Back pain is a common complaint among people. This study aimed to evaluate lower back pain (LBP) in athletes and non-athletes, identify the associated risk factors, and suggest management strategies. A cross-sectional study was conducted in Saudi Arabia from September 3 to October 15, 2020. The sample size was 1,446 individuals, random sampling was performed. It included individuals between 18 and 50 years. Participants with a congenital anomaly or a history of trauma or previous surgery were excluded. Data were collected using an online self-administered questionnaire which included the lower back pain portion of the Standardised Nordic Questionnaire. The Statistical Package for the Social Sciences was used to analyse the data. There were a total of 1446 participants were included, 64.5% of them had back trouble at least once in their lifetime. The remaining 35.5% did not experience this issue. Age, job, and BMI were identified to be significantly associated with lower back pain (p < 0.001). Lower back pain is common among older age groups. Age, obesity, and lifting heavy objects are the most common risk factors associated with lower back pain. Exercising regularly can decrease the incidence of lower back pain.

Keywords: *Lower back pain, Pain management, LBP, Athelets, Exercise*

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INTRODUCTION

One of the most typical complaints in the population is lower back pain (LBP). LBP is universally experienced by that many people at any instance. The symptoms of LBP range from dull pain to a stabbing sensation. LBP is characterised as pain with or without sciatica that is caused by either muscular stiffness or tension that is situated below the costal border and above the inferior gluteal folds. When LBP lasts for 12 weeks or longer, it is deemed chronic, and when it lasts for less than six weeks, it is deemed acute (AS *et al*., 2019; Moubarez *et al*., 2019).

According to several studies, LBP is one of the most common causes of hospital visits, and a major cause of activity limitation and loss of productive work in many regions of the world (Ganesan *et al*., 2017). The prevalence of LBP in the Saudi Arabian population is reported to be between 64% and 89% (Heidari *et al*., 2016). Thus, LBP is considered a significant economic threat to individuals, families, the workplace, and society.

In 2020, a cross-sectional study aimed to assess the diversity of sports activities among adults that perform any physical activity (3737 participants). The study excluded 458 individuals that performed physical activity less than once per month, 51 people who did not participate in sports, 338 people with long-term illnesses or disabilities (such as severe depression, osteoarthritis, or visual impairments that interfere with everyday activities), and 163 women who were pregnant at the time the poll was conducted. By conducting an anonymous survey, the quantity and quality of sports activities associated with LBP were explored (Murray & Lopez, 2013). In 2020, a cross-sectional study sought to understand the relationship between lower extremity discomfort and LBP in young basketball players (age, 6–15 years). That questionnaire was sent by email to 25,469 sports players; 7333 replied to the questionnaire, 88 were omitted because of missing data. The poll thus used a total sample size of 592 young basketball players. Of note, the surveyors did not mention the name of the questionnaire. Nonetheless, They discovered that lower extremity pain was linked to LBP in young basketball players

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(Kahere *et al*., 2022). In 2019, A 6-year birth cohort yearly survey was used in a prospective cohort research to examine gender differences in the link between extracurricular sports activities (ECSA) and LBP in children and adolescents. Their findings demonstrated an association between ECSA and LBP in both boys and girls, with females appearing to be more sensitive to ECSA-related LBP than boys (Khumalo & Haffejee, 2022).

To our knowledge, no previous study has investigated the difference in LBP prevalence among athletes and non-athletes. Therefore, The purpose of this study was to determine the prevalence of LBP in middle-aged athletes and non-athletes in Saudi Arabia. identify the risk factors that might increase LBP, and suggest strategies for pain management.

MATERIALS AND METHODS

The study was conducted in the Kingdom of Saudi Arabia from September 3 to October 15, 2020. This study was approved by higher authorities of Imam Muhammad bin Saud Islamic University. This study had a cross-sectional design and sought to determine the prevalence of LBP among adult athletes and non-athletes in Saudi Arabia and determine the risk factors that might increase LBP, and suggest strategies for pain management.

This study comprised individuals between 18 and 50 years old in the Kingdom of Saudi Arabia. However, individuals with a congenital abnormality, and trauma or previous surgery were excluded. The sample size was 1446, and random sampling was carried out. The data were obtained by an online self-administered questionnaire which included the LBP portion of the Standardised Nordic Questionnaire that is designed to measure symptoms of the musculoskeletal system. The questionnaire was distributed in Arabic, and comprised 31 questions divided into 6 sections; the first section covered demographic data (age, gender, weight, height, nationality, region, educational level, and job), the second section involved the risk factors, the third section had questions to differentiate between athletes and non-athletes; the fourth section included the exclusion criteria; the fifth section enabled the assessment of the prevalence of LBP, and the sixth section was used to explore LBP management among those with this condition.

The Statistical Package for the Social Sciences, SPSS 23rd edition, was used to analyse the data. Categorical variables were represented using frequency and percentages. Continuous variables were presented using the mean and standard deviation. To establish the presence of a relationship between categorical variables, the Chi-square test was utilised. The risk variables for LBP were identified using multivariate logistic regression. The following factors were included in the logistic regression model: age, gender, BMI, smoking status, work that involves sustained sitting, work involving frequent bending, work involving heavy object lifting, work involving sustained standing, sleeping hours per night, feeling of comfort on a bed, and exercising. The significance threshold was set at 0.05.

RESULTS AND DISCUSSION

The study had 1446 individuals in total. The sociodemographic profile of the participants is shown in **Table 1**. A total of 1041 (72%) participants were between the ages of 18 and 29, 209 (14.5%) were between the ages of 30 and 39, 136 (9.4%) were between the ages of 40 and 49, and 60 (4.1%) were between the ages of 50 and 59. Five hundred (34.6%) participants were males, while 946 (65.4%) were females. A total of 1377 (95.2%) participants were Saudi, and 69 (4.8%) were non-Saudi with 608 (42%) from the central region, 233 (16.1%) from the eastern region, 278 (19.2%) from the western region, 92 (6.4%) from the southern region, and 235 (16.3%) from the northern region. Fourteen (1%) participants had intermediate school education and less, 418 (28.9%) had high school education, 905 (62.6%) had a diploma/bachelor, 99 (6.8%) had higher education (master / Ph.D.), and 10 (0.7%) had other levels of education. Thirty-eight (2.6%) were self-employed, 156 (10.8%) were unemployed, 771 (53.3%) were students, 29 (2%) were retired, and 452 (31.3%) were employed. Based on BMI, 88 (6.1%) were underweight, 671 (46.4%) had a normal weight, 333 (23%) were overweight, and 231 (16%) were obese. A total of 206 (14.2%) participants were smokers, 1188 (82.2%) were non-smokers and 52 (3.6%) were ex-smokers.

Table 1. Socio-Demographic Profile of Participants (n = 1446)

Demographical Characteristics	n	%
Age		
18 - 29 years	1041	72.00
30 - 39 years	209	14.50
40 - 49 years	136	9.40
50 - 59 years	60	4.10
Gender		
Male	500	34.60
Female	946	65.40
Nationality		
Saudi	1377	95.20
Non-Saudi	69	4.80
Place of Residency		
Central Region	608	42.00
Eastern Region	233	16.10
Western Region	278	19.20
Southern region	92	6.40
Northern region	235	16.30
Education		
Intermediate school and less	14	1.00
High school	418	28.90
Diploma / Bachelora	905	62.60
Higher education (master / Ph.D.)	99	6.80
Others	10	0.70
Job		
Self-employed	38	2.60
Unemployed	156	10.80
Student	771	53.30

Retired	29	2.00
Employed	452	31.30
BMI		
Underweight	88	6.10
Normal weight	671	46.40
Overweight	333	23.00
Obese	231	16.00
Missing	123	8.50
Smoking		
Yes	206	14.20
No	1188	82.20
Ex-smoker	52	3.60

Table 2 demonstrates the exercise profile of the participants. A total of 655 (45.3%) participants reported exercising, while 791 (54.7%) did not exercise. For the participants who exercised, further questions were asked. For the number of exercise sessions per week, 214 (32.7%) reported exercising 1 – 2 times a day, 297 (45.3%) reported exercising 3 – 4 times per day, and 144 (22%) reported exercising 5 – 7 times. A total of 171 (26.1%) participants reported exercising less than 30 minutes, 344 (52.5%) reported exercising 30 – 60 minutes, 132 (20.2%) reported exercising 1 – 2 hours, and 8 (1.2%) reported exercising more than 2 hours. The most common types of exercise were: walking 577 (38.5%), running 245 (16.9%), and weightlifting 213 (14.7%).

Table 2. Exercise Profile (n = 1446)

Question	n	%
1/ Currently exercise:		
Yes	655	45.3
No	791	54.7
If you answer Yes to Question 1 (n = 655)		
2/ How many times per weekday do you exercise?		
1 -2 times	214	32.7
3 - 4 times	297	45.3
5 - 7 times	144	22
3/ How long each day do you exercise?		
Less than 30 minutes	171	26.1
30 - 60 minutes	344	52.5
1 - 2 hours	132	20.2
More than 2 hours	8	1.2
4/ What exercise do you do?		
Walking	557	38.5
Running	245	16.9
Weightlifting	213	14.7
Dancing	145	10
Football	87	6
Swimming	82	5.7
Bicycling	73	5
Self-defense	29	2
Horse riding	24	1.7
Basketball	21	1.5
Volleyball	15	1
Climbing	8	0.6
Diving	5	0.3
Tennis	3	0.2
Others	144	10

Table 3 displays the LBP profile of the participants. A total of 214 (23%) participants were hospitalized due to LBP. Further, 196 (21%) had to change duties owing to LBP. A total of 151 (16.2%) participants also had a history of being absent from work due to back pain. In the past 12 months, 211 (22.6%) reported never having LBP, 364 (39.1%) reported having LBP for 1 – 7 days, 107 (11.5%) reported having LBP for 8 – 30 days, 184 (19.7%) reported having LBP for more than 30 days but not every day, and 66 (7.1%) reported having LBP every day. A total of 331 (35.5%) participants reported that their work activity was reduced due to LBP in the past 12 months. In addition, 333 (35.7%) indicated that their leisure activity time had been restricted in the previous 12 months owing to LBP. LBP prevented 484 (51.9%) of the participants from doing their normal work (at home or away from home) never in the previous 12 months; however, 313 (33.6%) reported 1 - 7 days, 85 (9.1%) reported 8 - 30 days, and 50 (5.4%) reported more than 30 days where they could not perform regular work due to LBP. A total of 97 (10.4%) participants sought medical help for their LBP in the past 12 months. Further, 383 (41.1%) participants had lower back trouble in the past 7 days. For the nature of their complaint, 195 (20.9%) reported stiffness, 326 (35%) reported nagging feeling, 37 (4%) reported numbness, 42 (4.5%) reported a loss of strength, 69 (7.4%) reported cramp/spasm, 249 (26.7%) reported pain, and 14 (1.5%) reported other. The mean pain score (out of 10) was 4.52 + 2.16.

Table 3. Back Pain Profile (n = 932)

Question	n	%
1/ Have you been ever hospitalized due to lower back pain:		
Yes	214	23
No	718	77
2/ Have you ever had to change employment or responsibilities owing to lower back pain		
Yes	196	21
No	736	79
3/ Have you been absent from your work due to back pain?		
Yes	151	16.2
No	781	83.8
4/ How long have you been suffering from low back pain in the previous 12 months?		
Never	211	22.6

1 - 7 days	364	39.1
8 - 30 days	107	11.5
More than 30 days but not every day	184	19.7
Every day	66	7.1
5/ Has lower back trouble reduced your work activity during the last 12 months		
Yes	331	35.5
No	601	64.5
6/ Has lower back trouble reduced your leisure activity during the last 12 months		
Yes	333	35.7
No	599	64.3
7/ In the previous 12 months, how much time has lower back pain stopped you from conducting your typical work (at home or away from home):		
Never	484	51.9
1 - 7 days	313	33.6
8 - 30 days	85	9.1
More than 30 days	50	5.4
8/ In the recent 12 months, have you consulted a doctor, physiotherapist, chiropractor, or other expert for lower back pain?		
Yes	97	10.4
No	835	89.6
9/ Have you had lower back pain in the recent 7 days?		
Yes	383	41.1
No	549	58.9
10/ Which of the following best defines the nature of your complaint?		
Stiffness	195	20.9
Nagging feeling	326	35
Numbness	37	4
Loss of strength	42	4.5
Cramp/spasm	69	7.4
Pain	249	26.7
Others	14	1.5
Pain Score: (0 = none and 10 = maximum)		
Mean	4.52	
Standard Deviation	2.16	

Table 4 lists the factors associated with LBP. Age was significantly associated with LBP ($p < 0.001$), with older participants having a higher rate of LBP, except the 50 – 59 year group, which had a notably lower rate of LBP. The work was substantially related with LBP (p 0.001), with retired people having the greatest prevalence (82.8%) and students having the lowest rate (59.7%). BMI was also shown to be substantially related to LBP (p 0.001); the greater the BMI, the higher the risk of LBP. LBP was significantly associated with work that involved sustained sitting ($p = 0.018$), frequent bending ($p < 0.001$), and heavy object lifting (p 0.001); participants who answered yes or sometimes to these types of work had a notably higher rate of LBP than those who answered no. Feeling comfortable in bed was also significantly associated with LBP ($p < 0.001$); participants who were not comfortable in bed had a significantly higher rate of LBP than those who were comfortable in bed (73.8% vs 61.9%). The incidence of LBP was (64.7%) among athletes and (64.2%) among non-athletes. Thus, of the 932 participants, 424 (64.7%) were athletes that experienced LBP. However, a good percentage of athletes didn't experience LBP (35.3%) ($p = 0.840$). Gender, nationality, place of residency, education, smoking, working hours, and work that involves sustained standing, sleeping hours, and exercising were not significantly associated with LBP.

Table 4. Factors Associated with Lower Back Pain

Factor	Lower Back Pain		P-Value
	Yes	**No**	
Age			
18 - 29 years	641 (61.6%)	400 (38.4%)	< 0.001*
30 - 39 years	140 (67%)	69 (33%)	
40 - 49 years	100 (73.5%)	36 (26.5%)	
50 - 59 years	51 (58%)	9 (15%)	
Gender			
Male	310 (62%)	190 (38%)	0.156
Female	622 (65.8%)	324 (34.2%)	
Nationality			
Saudi	890 (64.6%)	487 (35.4%)	0.524
Non-Saudi	42 (60.9%)	27 (39.1%)	
Place of Residency			
Central Region	403 (66.3%)	205 (33.7%)	0.052
Eastern Region	141 (60.5%)	92 (39.5%)	
Western Region	179 (64.4%)	99 (35.6%)	

Southern region	69 (75%)	23 (25%)	
Northern region	140 (59.6%)	95 (40.4%)	
Education			
Intermediate school and less	11 (78.6%)	3 (21.4%)	
High school	262 (62.7%)	156 (37.3%)	
Diploma / Bachelora	579 (64%)	326 (36%)	0.219
Higher education (master / Ph.D.)	73 (73.7%)	26 (26.3%)	
Others	7 (70%)	3 (30%)	
Job			
Self-employed	24 (63.2%)	14 (36.8%)	
Unemployed	114 (73.1%)	42 (26.9%)	
Student	460 (59.7%)	311 (40.3%)	< 0.001*
Retired	24 (82.8%)	5 (17.2%)	
Employed	310 (68.6%)	142 (31.4%)	
BMI			
Underweight	47 (53.4%)	41 (46.6%)	
Normal weight	394 (58.7%)	277 (41.3%)	< 0.001*
Overweight	234 (70.3%)	99 (29.7%)	
Obese	168 (72.7%)	63 (27.3%)	
Smoking			
Yes	139 (67.5%)	67 (32.5%)	
No	758 (63.8%)	430 (36.2%)	0.542
Ex-smoker	35 (67.3%)	17 (32.7%)	
Working hours			
0 - 6 hours	534 (64.7%)	291 (35.3%)	
7 - 12 hours	370 (64.5%)	204 (35.5%)	0.773
More than 12 hours	28 (59.6%)	19 (40.4%)	
Does your work involve sustained sitting?			
Yes	534 (63.1%)	312 (36.9%)	
No	100 (58.5%)	71 (41.5%)	0.018*
Sometimes	298 (69.5%)	131 (30.5%)	
Does your work involve frequent bending?			
Yes	411 (71.5%)	164 (28.5%)	
No	185 (58%)	134 (42%)	< 0.001*
Sometimes	336 (60.9%)	216 (39.1%)	
Does your work involve heavy objects lifting?			
Yes	74 (70.5%)	31 (29.5%)	
No	636 (61.5%)	398 (38.5%)	0.001*
Sometimes	222 (72.3%)	85 (27.7%)	
Does your work involve sustained standing?			
Yes	259 (68.5%)	119 (31.5%)	
No	332 (61.4%)	209 (38.6%)	0.083
Sometimes	341 (64.7%)	186 (35.3%)	
Sleeping hours per night:			
Less than 4 hours	16 (76.2%)	5 (23.8%)	
4 - 6 hours	300 (66.1%)	154 (33.9%)	0.220
6 - 8 hours	488 (62.3%)	295 (37.7%)	

More than 8 hours	128 (68.1%)	60 (31.9%)	
Feeling comforted in bed			
Yes	701 (61.9%)	432 (38.1%)	< 0.001*
No	231 (73.8%)	82 (26.2%)	
Do you currently exercise?			
Yes	424 (64.7%)	231 (35.3%)	0.840
No	509 (64.2%)	283 (35.8%)	

*Significant at level 0.05

The findings of multivariate logistic regression to assess the risk variables for LBP are shown in **Table 5**. The following factors were included in the logistic regression model: age, gender, BMI, smoking status, working hours that involve sustained sitting, a job with frequent bending, a job with heavy object lifting, a job with sustained standing, sleeping hours per night, feeling comfortable in bed, and exercising. The following factors predicted a higher rate of LBP: aging 50 – 59 years (p = 0.004, odds ratio = 3.04), Overweight (p = 0.01, odds ratio = 1.97), obese (p = 0.005, odds ratio =2.19) and working more than 12 hours (p = 0.06, odds ratio = 1.52). The following factors predicted a lower rate of LBP: being an ex-smoker (p = 0.031, odds ratio = 0.47), a job that does not involve sustained sitting (p < 0.001, odds ratio = 0.54), and a job that only sometimes involves sustained sitting (p < 0.001, odds ratio = 0.54). The following factors were not associated with LBP: gender, a job with frequent bending, a job with heavy object lifting, a job with sustained standing, sleeping hours per night, and exercising.

Table 5. Multivariate Logistic Regression (Factors Predicting Lower Back Pain)

Factor	P-Value	Odds Ratio	Confidence Interval	
Age (18 - 29 years is the referent)				
30 - 39 years	0.119	1.32	0.93	1.88
40 - 49 years	0.058	1.53	0.99	2.38
50 - 59 years	0.004*	3.04	1.42	6.47
Gender (Male vs Female)	0.015	0.70	0.53	0.93
BMI (Underweight is the referent)				
Normal weight	0.465	1.19	0.75	1.90
Overweight	0.01*	1.97	1.18	3.30
Obese	0.005*	2.19	1.27	3.78
Smoking (Yes is the referent)				
No	0.528	0.92	0.72	1.19
Ex-smoker	0.031*	0.47	0.23	0.94
Working hours (0 - 6 hours is the referent)				
7 - 12 hours	0.825	0.96	0.64	1.42
More than 12 hours	0.006*	1.52	1.13	2.06
Does your work involve sustained sitting? (Yes is the referent)				
No	< 0.001*	0.54	0.39	0.76
Sometimes	< 0.001*	0.54	0.40	0.72
Does your work involve frequent bending? (Yes is the referent)				
No	0.546	0.86	0.51	1.42
Sometimes	0.201	1.43	0.83	2.47
Does your work involve heavy objects lifting? (Yes is the referent)				
No	0.777	1.05	0.75	1.48
Sometimes	0.772	0.95	0.69	1.32
Does your work involve sustained standing? (Yes is the referent)				
No	0.146	0.76	0.52	1.10

Sometimes	0.787	0.91	0.45	1.84
Sleeping hours per night (Less than 4 hours is the referent)				
4 - 6 hours	0.883	0.92	0.31	2.78
6 - 8 hours	0.815	0.88	0.29	2.63
More than 8 hours	0.749	1.21	0.38	3.79
Feeling comforted in bed (Yes vs No)	< 0.001*	0.52	0.38	0.72
Do you practice any exercises currently? (Yes vs NO)	0.401	0.90	0.71	1.15

* Significant at level 0.05

Low back pain (LBP) is a critical global health issue that causes significant disability in those who suffer from it (Murray & Lopez, 2013; Kahere *et al*., 2022). It is a substantial health concern in both athletes and non-athletes, and it is frequently accompanied by significant limitations in daily functioning. 60%-80% of persons will have low back pain (LBP) at some point in their lives (Khumalo & Haffejee, 2022). In the United States, low back discomfort is the sixth most prevalent cause for all doctor visits (Shim *et al*., 2021). Severe LBP was defined as discomfort in the lower back that interfered with sports or school engagement. Gymnastics, diving, weightlifting, golf, American football, and rowing are among the sports with the highest prevalence of back discomfort (Ganesan *et al*., 2017). This is cross-sectional study was conducted in Saudi Arabia and included 1,446 individuals between 18 and 50 years. The study aimed to evaluate lower back pain (LBP) in athletes and non-athletes, identify the associated risk factors, and suggest management strategies.

In athletes, the incidence of low back discomfort ranges from 1% to 40% (Bono, 2004). According to a 2017 Lancet assessment of the prevalence of Low Back Pain (LBP) in the adult general population, prevalence was higher in high-income nations (30%) than in low-income countries (18.2%), and females were more prevalent than males (Maher *et al*., 2017). In general, It is unclear whether low back discomfort affects athletes more frequently than non-athletes. According to the incidence of LBP, our study found that the prevalence of LBP among all participants was 64.5%, with 64.7% and 64.2% among athletes and non-athletes respectively and there was no significant association between the athletes and non-athletes. 264 people were the subjects of a cross-sectional research to determine pain indices and correlations of LBP; the athlete group consisted of 172 participants whereas 92 individuals were non-athletes (Heidari *et al*., 2016). The findings indicate that different individuals listed LBP as one of their two primary symptoms (59.5%) (Heidari *et al*., 2016). According to Koes *et al.* definition .'s (Tarimo & Diener, 2017), participants were split into three LBP categories based on the length of their pain: acute pain (less than six weeks; 34.3% athletes; 32.2% non-athletes); subacute pain (between six and twelve weeks; 3% athletes; 8.9% non-athletes); and chronic pain (more than twelve weeks; 62.7% athletes; 58.9% non-athletes) (Heidari *et al*., 2016). Another cross-sectional survey of elite and semi-elite male Australian football code participants and a non-athletic group revealed that the elite group has a prevalence of 77.9%, semi-elite 66.7%, and non-athletic 62.2% (Hoskins *et al*., 2009). Furthermore, the data demonstrate a generally linear pattern of increasing LBP severity from non-athletes to semi-elite and elite groups, with the top group accounting for 42.1%, the semi-elite group accounting for 29.7%, and the non-athletic group accounting for 28.4% (Hoskins *et al*., 2009). Another cross-sectional study was conducted among elite female football (n = 277) and handball players (n = 190), as well as a randomly selected control group from the Norwegian population (n = 167), to compare the prevalence of low back pain (LBP) among female elite football and handball players to a matched non-professional active control group (Tunås *et al*., 2015). The study discovered that more than 60% of the groups had had LBP at some point; 57% of football players and 59% of handball players had experienced LBP, and the variations in the frequency of LBP across the groups were not statistically significant (p = 0.62) (Tunås *et al*., 2015). However, the results show a high prevalence of LBP in the control group (60 %) (Tunås *et al*., 2015). which was not in accordance with previous findings (Hoskins *et al*., 2009; Koyama *et al*., 2022; Morimoto *et al*., 2022). According to Hangai *et al*., volleyball players have a higher risk of LBP (78%), compared to control patients (50%). Another research by Bahr *et al*. found that 63% of cross-country skiers, 55% of rowers, and 50% of orienteers had LBP in the preceding 12 months, which was greater than nonathletic controls (OR [95% CI]: 1.94 [1.29-2.92]) (Trompeter *et al*., 2017). India has A cross-sectional study of 1,532 young individuals aged 18 to 35 years discovered that the prevalence of LBP was 42.4% per year and 22.8% every week (Palsson *et al*., 2021). Another study carried out among 206 individuals reported that (64.6%) of the patients had LBP for around 1 year followed by 11.2% of the patients who had it for 1 month or more and only 9.2% of them were suffering for over 3 years (Ramdas & Jella, 2018).

According to risk factors associated with LBP, our study reported that age was significantly associated with LBP (p < 0.001), with older participants having a higher rate of LBP, except the 50 – 59-year group, which had a notably lower rate of LBP, The work was substantially related to LBP (p 0.001). with the highest rate of LBP, was found in retired participants (82.8%), and the lowest rate found in students (59.7%) and BMI were also significantly associated with LBP (p < 0.001); that the higher the BMI the higher the rate of LBP. Also, LBP was significantly associated with work that involved sustained sitting (p = 0.018), frequent bending (p < 0.001), and heavy object lifting (p 0.001); participants who answered yes or sometimes to these types of work had a notable higher rate of LBP than those who answered no, feeling comfortable in bed was also significantly associated with LBP (p < 0.001); participants who were not comfortable in bed had a significantly higher rate of LBP than those who were comfortable in bed (73.8% vs 61.9%). However, gender, nationality, place of residency, education, smoking, working

hours, and work that involves sustained standing, sleeping hours, and exercising were not significantly associated with LBP. Another study done in India found that marital status, previous history of spinal issues, vigorous exercise, work satisfaction, monotony, stress, daily amount of study hours, and family history of spine problems were all substantially linked with LBP (p0.05). Age, gender, smoking, drunkenness, coffee consumption, mode and duration of travel, nutrition, frequency of weightlifting, wearing heels, studying posture, and frequency and kind of sports activities, on the other hand, were not related to LBP (Palsson *et al*., 2021). Previous research has shown that having a high body mass index (BMI) is connected with a higher risk of LBP (Franchini *et al*., 2022). Furthermore, Petering & Webb, (2011) revealed that genetic factors play a significant role in LBP occurrence and that a positive family history has a substantial link with LBP incidence (van Tilburg *et al*., 2022). Results from another study demonstrated that the most common risk factors for LBP in the present study were physical exercise and stress. Also, lifting weights, obesity, and sitting for long periods were some of the risk factors (Ramdas & Jella, 2018). Moreover, Physical factors are not the only risk factors for LBP; psychological issues such as stress, anxiety, sadness, and boredom are also possible risk factors for LBP (Lamper *et al*., 2021).

Regarding management strategies of LBP, Petering RC *et al*. Medication and treatments are the two broad types of therapy for low back pain, according to (Petering & Webb, 2011). Towels, gel packs, ice packs, and ice massage can all be used to apply cold to the low back. Water bottles and baths, soft packs, saunas, steam, wraps, and electric pads are all examples of heat techniques (Petering & Webb, 2011). A Cochrane study found that superficial heat treatment reduced pain and impairment in individuals with acute and subacute low back pain, with the inclusion of exercise further lowering pain and increasing function (Fayaz *et al*., 2016). Low-level laser therapy (LLLT) is a noninvasive light source treatment that emits a single wavelength of light while generating no heat, sound, or vibration. LLLT, also known as photobiology or biostimulation, may hasten connective tissue healing and act as an anti-inflammatory agent (Petering & Webb, 2011). However, a Cochrane review of seven small trials including 384 individuals with nonspecific low back pain across varying time periods found insufficient evidence to support or reject the usefulness of LLLT for the treatment of low back pain (Yousefi-Nooraie *et al*., 2008). Nonsteroidal anti-inflammatory medications (NSAIDs), a major Cochrane analysis of 65 studies (11 237 individuals) of NSAIDs and COX-2 inhibitors in the treatment of acute and chronic low back pain found that NSAIDs had significantly superior benefits than placebo (Roelofs *et al*., 2008). Tramadol was shown to be more effective than a placebo for pain relief and improved function in a 2007 Cochrane study of opioids for persistent low back pain (Deshpande *et al*., 2007). In terms of spinal manipulation therapy (SMT), there was moderate evidence of short-term pain reduction with SMT treatment for acute low back pain (Rubinstein *et al*., 2019). Chronic low back pain shown modest progress with SMT, which is equally effective as NSAIDs and more effective than physical therapy over time (Rubinstein *et al*., 2019). Dagenais also discovered SMT to be useful in the short-, intermediate-, and long-term therapy of acute low back pain (Dagenais *et al*., 2010). Exercise treatment appears to be somewhat useful in reducing pain and increasing function in persons suffering from chronic low back pain (Dowell *et al*., 2022). In general, the therapies for LBP accessible to clinicians are diverse, but only a handful show evidence of effectiveness.

CONCLUSION

This research explored the prevalence of LBP between middle-aged athletes and non-athletes in Saudi Arabia, and the associated risk factors. The prevalence of LBP among all participants with no significant association was found. In other studies, the comparison of athletes and non-athletes in terms of LBP and the associated risk factors was limited to younger age groups thereby differing from the current study, which assessed middle-aged individuals. According to our study, the predisposing factors that increased the risk of LBP were age, obesity, and lifting heavy objects.

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