Galore International Journal of Applied Sciences and Humanities
[Indexed, Peer Reviewed Journal]
Vol. 9; Issue: 2; April-June 2025
Website: www.gijash.com
Research Paper *P-ISSN: 2456-8430*

Prevalence of Musculoskeletal Disorders in Gym Trainers in Jalgaon City - A Cross-Sectional Study

Dr. Mukesh Shinde[1], Fatima Memon[2], Dr. Pradnya Mahajan[3], Dr. Shruti Chaudhari[4]

[1]Assistant Professor of Musculoskeletal Department, [2]BPTH, [3]Assistant Professor of Musculoskeletal Department, [4]Assistant Professor of Neuro Department
Dr. Ulhas Patil College of Physiotherapy, MUHS, Jalgaon, India.

Corresponding Author: Dr. Mukesh Shinde

DOI: https://doi.org/10.52403/gijash.20250206

ABSTRACT

Musculoskeletal disorders are common consequence of work-related hazards. The major cause of MSD is commonly caused by bodily reaction, overexertion, or repetitive motion. It usually occurs due to repetitive activities that cause pain, strain on muscles, and sprain in ligament. It can cause pain, stiffness and often other inflammation in one or more joints or muscles. The task involved load lifting over the head, awkward posture and repetitive that could lead to the risk of work -related musculoskeletal disorders (WMRDs).

Methods: 76 participants with musculoskeletal disorders were recruited from different gyms primary outcome was Nordic Musculoskeletal questionnaire. Data were analyzed using graph pad Instat.

Results: A total 76 participants responded to the survey. The highest prevalence rate of MSDs was in the Shoulder (25%), lower back (20%), Wrist (12%) and Upper Back (12%), Ankle (9%) the lowest prevalence rate of MSDs was in Hip (8%), Neck (6%), Knee (5%) and elbow (3%). The findings from this study also revealed that 34 % of the subjects had experienced MSDs over the last 12 months. Table presents the results of the Nordic questionnaire.

Conclusion: This study concluded that the gym trainers are having pain and trouble during normal work with a prevalence rate of 34% with severe trouble in their shoulder (25%) and lower back (20%).

Keywords: Musculoskeletal Disorders, GYM Trainers, NORDIC questionnaire.

INTRODUCTION

Musculoskeletal disorders are common consequence of work-related hazards. The major cause of MSD is commonly caused by bodily reaction, overexertion, or repetitive motion. It usually occurs due to repetitive activities that cause pain, strain on muscles, and sprain in ligament. It can cause pain, stiffness and often other inflammation in one or more joints or muscles. The task involved load lifting over the head, awkward posture and repetitive that could lead to the risk of work -related musculoskeletal disorders (WMRDs). Musculoskeletal pain can result from traumatic events such as jerky movements, falls, fractures, or underlying musculoskeletal diseases; it can also be result of unusual or repetitive activities that strain the muscles, tendons, and sprain the ligaments.[1] Rapid work pace, repetitive motion patterns, insufficient recovery time, heavy lifting forceful manual exertions, non-neural body postures, obesity, smoking, mechanical pressure concentrations, segmental or whole-body exposure are all

associated with the development of MSDs. [2] It is defined that musculoskeletal system and connective tissue disease and disorders are seen due to events or exposure leading to the cause in bodily reaction (e.g., bending, climbing, crawling, twisting, overexertion or repetitive motion) MSDs do not include disorders caused by slips, trips, falls, or similar incident.

The most common injuries seen by personal trainers during sessions were lumbar muscle strain, rotator cuff tear/tendonitis, shin splints, ankle sprain, and cervical muscle strain. Personal trainers reported a variety of head injuries, fractures, and tendon ruptures as well which tend to be more involved injuries. Ability to perform a bodyweight squat correctly may help professionals design a safe exercise program.[13] WRMSDs describe a wide range of inflammatory and degenerative disease conditions that result in pain and functional impairment affecting the Neck, Back, Shoulder, Elbow, Wrist and Hand. Moreover, the WRMSDs are defined differently in different study some restrict the case definition base on clinical pathology, some explain due to symptoms and some due to objectively demonstrable pathological process and some due to work disability. [3,4]

In previous 10-15 years, the fitness industry has seen growth in the number of attendants. Individuals can improve their cardiovascular endurance, muscular and bone strength, immune system, mobility and balance, and posture by working with gym trainers in the business. though physical activity and exercise provide various health benefits, one main drawback is potential of injuries that result in pain.[5]

Repetitive strain injury, repetitive trauma disorder, and cumulative trauma disorder are used interchangeably when referring to work – related musculoskeletal disorders, which has been described as the well – known and frequent cause of severe long – term pain and physical disability that affect hundreds of million people worldwide [6,7] and are a significant economic burden on society in terms of decreased productivity and personal suffering [8].

The most common injuries seen in gym trainers during sessions were lumbar muscle strain (10.7%), rotator cuff tear /tendonitis (8.9%), shin splints (8.1%), ankle sprain (7.5%), and cervical muscle strain (7.4%).[9] Personal trainers help with the design and implementation of safe and effective resistance training and cardiovascular exercise programs. According to the National Strength and Conditioning Association (NSCA)'s Scope of Practice for their certified personal trainer, personal trainers are professionals that use an individualized approach, assess, motivate, educate and train clients regarding their health and fitness needs.

A cross-sectional study conducted by Shinde N, Sahasrabuddhe P in which 108 gym instructors from various fitness clubs. The research was conducted using a self-administered questionnaire. The scores were subjected to a percentile analysis. According to the findings, 16 percent of gym instructors complained from shoulder, low back, and knee injuries. Around 82 percent of gym instructors felt pain in different parts of their bodies. As a result, they came to the conclusion that the prevalence of pain and injury was significant in this area which demands fitness industries to adapt prevention strategies.

The Nordic musculoskeletal questionnaire was a project funded by the Nordic council of Ministers. The NMQ is a reliable and valid assessment tool. [21] The NMQ is divided into two sections: the first is a general questionnaire that identifies the body areas that cause musculoskeletal problems; the second section is a body map that shows nine symptom sites (neck, shoulder, upper back, elbows, low back, wrist/hands, hips/thighs, knees, and ankles/feet). If the participant has had any musculoskeletal problems in the previous 12 months, he or she must respond (yes or no). The questionnaire next asked if the symptoms had hindered the responder from doing his or her typical work at home or

away from home in the previous 12 months, and if he or she had pain in any of the nine body sites. Items on perception of job risk factors and coping mechanisms were also included in the questionnaire.

This study helps to enhance proper intervention to prevent exposure to musculoskeletal discomfort such as ergonomic intervention in their working environment. And to make person aware of being physically active in order to minimize their health problems i.e., musculoskeletal discomfort. It also helps to ensure job efficiency and quality of life among gym trainers. Thus, there is need to study the prevalence of work-related musculoskeletal disorders among gym trainers in Jalgaon. To our best knowledge no other study has been conducted on musculoskeletal disorder in gym trainers in Jalgaon. Therefore, this study is aimed to assess MSDs in gym trainers.

MATERIALS & METHODS

MATERIAL:

Pen, pencil, Questionnaire, Informed consent form.

METHODS:

- **Study design:** Cross sectional study
- **Study population:** Gym trainers who have experience of more than 1 year.
- **Sampling Method:** Convenient sampling
- **Sample Size:** 76
- **Outcome measure:** Nordic musculoskeletal questionnaire

Inclusion Criteria

1. Gym trainers who regularly take workout sessions for 3-4 hours/day.
2. Gym trainers between age group of 20 – 50 years.
   Both male and female.
3. Experience > 1 year.

Exclusion Criteria

1. Subject who is not willing to take part.
2. Recent trauma / injury.
3. Fracture or any bone deformity.
4. Pregnancy
5. Trainers who were having pain and musculoskeletal injuries before joining the gym.

Outcome Measures

1.Nordic Musculoskeletal Questionnaire (ICC=0.9) [21]

PROCEDURE

To conduct the following study, approval was taken from Institutional ethical committee (IEC) of Dr. Ulhas Patil College of Physiotherapy, Jalgaon. Subjects were taken according to the inclusion and exclusion criteria. Prior to starting the study, the procedure was explained and informed written consent form was taken from the subjects. Subjects were explained about the study and given information about how the study will benefit them. The gym trainers were asked to fill the questionnaire according to the injury and pain that is usually occurring in them due to their sessions and workout routine. In order to determine the prevalence of MSDs in different limbs of the gym trainers, NORDIC Musculoskeletal questionnaire was used.

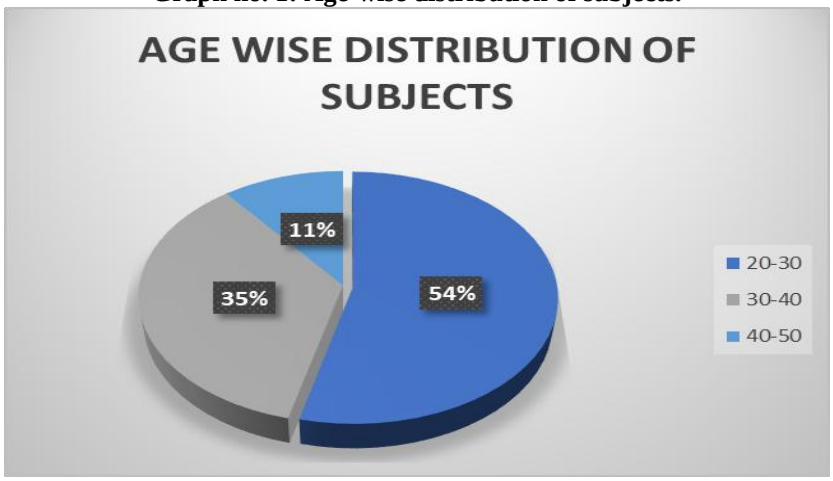
DATA ANALYSIS

Data was entered in excel spreadsheet, tabulated and subjected to statistical analysis. Data was analysed by using Graph pad Instat, checking the prevalence of musculoskeletal injuries among GYM trainers in Jalgaon.

Table no. 1: Age wise distribution of subjects:

AGE GROUP	NO. OF SUBJECTS	MEAN
20-30	41	31.18
30-40	27	
40-50	08	

Graph no. 1: Age-wise distribution of subjects.

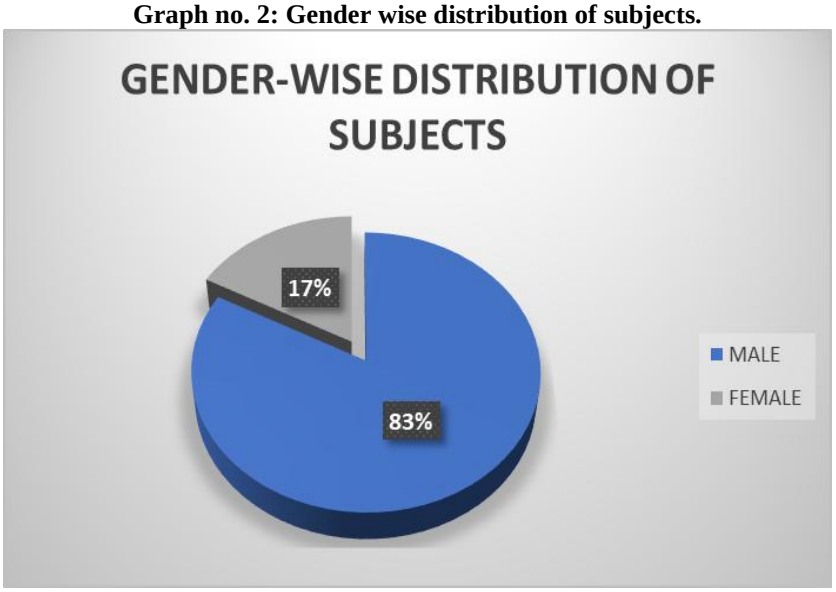


Comment: The table and Pie-diagram No. 1 show age-wise distribution of Study subjects of which 41 patients were from age group 20-30 years old, 27 patients were from 30–40-year-old and 08 patients were from 40-50 years old.

Table no. 2: Gender wise distribution of subjects.

GENDER	NO. OF SUBJECTS	PERCENTAGE (%)
Male	63	83%
Female	13	17%

Graph no. 2: Gender wise distribution of subjects.

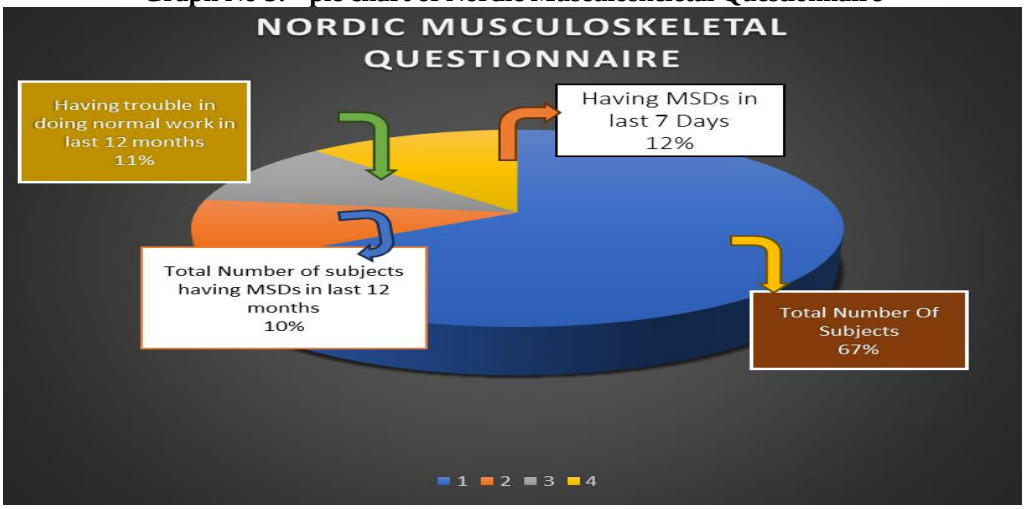


Comment: The table and pie-diagram No. 2 show Gender-wise distribution of study subjects. There were 83% subjects are males & 17% subjects are females.

Table No 3: Musculoskeletal Injuries among gym trainers

Total number of subjects	Total number of subjects having MSDs in last 12 month	Having trouble in doing normal work in last 12 months due to MSDs	Having MSDs in last 7 days
76	12	12	14

Graph No 3: - pie chart of Nordic Musculoskeletal Questionnaire

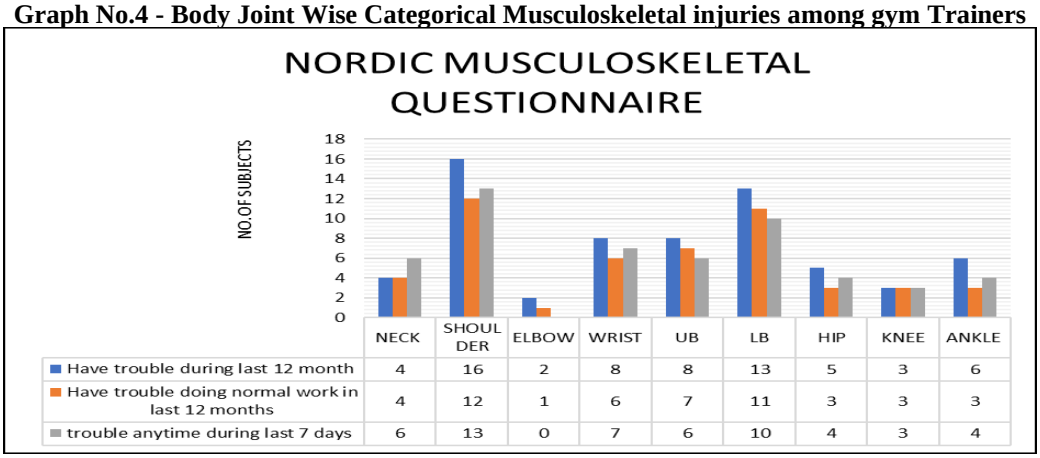


Comment: The Pie Diagram show the total number of subjects evaluated and number of subjects having MSDs since last 12 month, who have trouble in doing normal work in last 12 month and having MSDs in last 7 days.

Table no.4: Body Joint Wise Categorical Musculoskeletal injuries among gym trainers

Joint-Wise Categorical Musculoskeletal Dysfunction	Total number of subjects having MSDs in last 12 month	Having trouble in doing normal work in last 12 months due to MSDs	Having MSDs in last 7 days
Neck	4	4	6
Shoulder	16	12	13
Elow	2	1	0
Wrist	8	6	7
Upper Back	8	7	6
Lower Back	13	11	10
Hips	5	3	4
Knees	3	3	3
Ankle	6	3	4

Graph No.4 - Body Joint Wise Categorical Musculoskeletal injuries among gym Trainers



Comment: The table no 4 and graph no 4 shows total number of subjects having MSDs in last 12 months and 7 days.

RESULT

A total 76 participants responded to the survey. The highest prevalence rate of MSDs was in the Shoulder (25%), lower back (20%), Wrist (12%) and Upper Back (12%), Ankle (9%) the lowest prevalence rate of MSDs was in Hip (8%), Neck (6%), Knee (5%) and elbow (3%). The findings from this study also revealed that 34 % of the subjects had experienced MSDs over the last 12 months. Table presents the results of the Nordic questionnaire.

DISCUSSION

The primary aims of this cross-sectional study was to determine the prevalence of musculoskeletal discomfort in gym trainers in Jalgaon. As it is commonly known, maintaining poor posture for prolong periods of time can result in chronic muscular fatigue, discomfort or pain. More significantly, prolonged exposure to high static muscle and joint load may lead the soft tissue to adaptively change, and with time may lead to pathological effect and permanent disability. This is one of the most common causes of numerous injuries and suffering.

A study among gym instructors in India was done by few researchers to determine the prevalence of musculoskeletal discomfort and injuries. Gym trainers, in their opinion, engage in high-intensity work during personal sessions or when support clients during training sessions. This is one of the most common causes of numerous injuries and suffering.

A cross-sectional study of 76 gym trainers from various fitness clubs was conducted. The scores were subjected to a percentile analysis. According to the findings, 34 percent of gym trainers complained from shoulder, lower back, Wrist, Upper back, Ankle. As a result, they came to the conclusion that the prevalence of pain and injury was significant in this area which demands fitness industries to adapt prevention strategies. The results of the current study showed that Gym trainers have a high level of MSDs.

A cross-sectional study conducted by Shinde N, Sahasrabuddhe P in which 108 gym instructors from various fitness clubs. The research was conducted using a self-administered questionnaire. The scores were subjected to a percentile analysis. According to the findings, 16 percent of gym instructors complained from shoulder, low back, and knee injuries. Around 82 percent of gym instructors felt pain in different parts of their bodies. As a result, they came to the conclusion that the prevalence of pain and injury was significant in this area which demands fitness industries to adapt prevention strategies. prevalence of musculoskeletal injuries is higher in male instructors than in females.

Another conducted in online survey study Norway among gym instructors in three different fitness centres. Total 1473 fitness group teachers were participated. Questions about working as a group fitness teacher for a long time, weekly instructions, exercise loading and modality, injuries, musculoskeletal pain, usage of alcohol, nicotine, snuff, menstrual dysfunction, and disordered eating were assessed as independent variables (Eating Disorder Inventory, EDI). The participants were divided into two groups;(HIL), which consisted of 5 hours of training per week, and low instruction loading (LIL), which consisted of 5 hours of instruction per week. The response rate was 57% (n=837). The mean total loading (instruction plus exercises) in the HIL and LIL group was 11.8 h/w and 6.3 h/w, respectively (p.001). Acute injuries (9% vs. 6%, p.05), overuse injuries (38% vs.24%, p.001), and combined acute and overuse injuries (25% vs. 10%, p.001) were all more common in the HIL group than in the LIL group. The most usually affected locations were the ankle and lower leg. Musculoskeletal pain was most common in the shoulder/neck area. Injury was associated to instruction loading (h/w), years as an instructor, and EDI score. A high total EDI score predicted musculoskeletal pain. The high rate of injuries and musculoskeletal discomfort in the fitness industry demonstrates the necessity for preventive measures. Weekly instruction loading must be kept to a minimum, especially in classes with significant metabolic and /or mechanical demands.

In our study we found that Gym/fitness Trainers job has several risk factors that may be related to ergonomics, high intensity, weight lifting, environment, nature of work, repetitive movements. So, they are prone in musculoskeletal pain and injuries and there is scarce in literature also.

Common strength training exercise is squatting and to avoid overuse injury while performing it proper knowledge of loading and posture is important. In a previous study it was confirmed that, while performing restricted squats there was increase in the thoracic curvature leading to stresses at back, whereas performing unrestricted squats there was increase in knee ROM and at the trunk small amount of segmental movements were seen. Fitness instructors have limited knowledge regarding the injuries and injury prevention.

An epidemiological study has provided evidence regarding the overuse injuries seen in competitive cyclists and the common site is low back and knee. Monotonous exercise loading was a predominant factor among the instructors. The elbow and wrist region were noted to be the highest site of new injuries with no history of previous pain or injury. The most common type of injuries were sprain, strain and tendinitis. Reason for low back pain can be strain on the muscles or sprain at the ligaments. Strain of the muscles results due to heavy weight lifting during high intensity workout. Sudden twisting of spine while lifting weight will also cause injury to the lower back. In absence of core muscle training, lifting heavy weights can also be the reason of pain or injury. The other most common region prone to injury or pain is knee joint and the possible reason can be spasm of thigh muscle, ligament sprains, tight hamstring and quadriceps.

During heavy weight lifting there is excessive loading at the patellofemoral joint which may give rise to retro-patellar pain. Heavy mechanical loading when performed with weights causes the ligaments to stretch leading to sprain of ligaments. Spasm of the muscles are caused due to lack of warm up and stretching activity. In one study they confirmed that, the most prevalent site of injuries in Gym instructors were shoulder & lower back.

In the present study it is found that prevalence of 26 % of the subjects had experienced MSDs over the last 12 months, 16% of the subjects having trouble in doing normal work in last 12 months due to MSDs & 22% of the subjects having MSDs in last 7 days.

CONCLUSION

This study concluded that the gym trainers are having pain and trouble during normal work with a prevalence rate of 34% with severe trouble in their shoulder (25%) and lower back (20%).

Declaration by Authors

Ethical Approval: Study was Approved by Institutional Ethical Committee of DUPCOP, Jalgaon

Acknowledgement: None

Source of Funding: None

Conflict of Interest: None

REFERENCES

1. Dieppe P. Chronic musculoskeletal pain. BMJ. 2013 May 16;346: f3146. doi: 10.1136/bmj. f3146. PMID: 23709528.
2. Taanila H, Suni JH, Kannus P, Pihlajamäki H, Ruohola JP, Viskari J, Parkkari J. Risk factors of acute and overuse musculoskeletal injuries among young conscripts: a population-based cohort study. BMC Musculoskelet Disord. 2015 May 1; 16:104. doi: 10.1186/s12891-015-0557-7. PMID: 25925549; PMCID: PMC4429711.
3. Arun Vijay.S. (2013). "Work-related Musculoskeletal Health Problems among the Information Technology Professionals in India: A Prevalence Study". International Journal of Management Research and Business Strategy. Volume 2, Issue 2, pp. 118-127.
4. Rajinder Kumar Moom et.al.: (2015) conducted a cross-sectional study for determining Prevalence of Musculoskeletal Disorder among Computer Bank Office Employees in Punjab (India): A Case Study.
5. Shinde, Nikita & Sahasrabuddhe, Priya. (2021). Prevalence of Musculoskeletal Pain and Injuries in Gym Instructors. International Journal of Health Sciences and Research. 11. 62-67. 10.52403/ijhsr.20210408.
6. Bernal D, Campos-Serna J, Tobias A, Vargas-Prada S, Benavides FG, Serra C. Work-related psychosocial risk factors and musculoskeletal disorders in hospital nurses and nursing aides: a systematic review and

meta-analysis. Int J Nurs Stud. 2015 Feb;52(2):635-48. doi: 10.1016/j.ijnurstu.2014.11.003. Epub 2014 Nov 15. PMID: 25480459.
7. Yang S, Li L, Wang L, Zeng J, Li Y. Risk Factors for Work-Related Musculoskeletal Disorders Among Intensive Care Unit Nurses in China: A Structural Equation Model Approach. Asian Nurs Res (Korean Soc Nurs Sci). 2020 Oct;14(4):241-248. doi: 10.1016/j.anr.2020.08.004. Epub 2020 Aug 25. PMID: 32858213.
8. Bazazan A, Dianat I, Bahrampour S, Talebian A, Zandi H, Sharafkhaneh A, Maleki-Ghahfarokhi A. Association of musculoskeletal disorders and workload with work schedule and job satisfaction among emergency nurses. Int Emerg Nurs. 2019 May; 44:8-13. doi: 10.1016/j.ienj.2019.02.004. Epub 2019 Mar 20. PMID: 30902617.
9. Waryasz GR, Daniels AH, Gil JA, Suric V, Eberson CP. Personal Trainer Demographics, Current Practice Trends and Common Trainee Injuries. Orthop Rev (Pavia). 2016 Oct 3;8(3):6600. doi: 10.4081/or.2016.6600. PMID: 27761219; PMCID: PMC5066109.
10. Melton DI, Katula JA, Mustian KM. The current state of personal training: an industry perspective of personal trainers in a small Southeast community. J Strength Cond Res. 2008 May;22(3):883-9. doi: 10.1519/JSC.0b013e3181660dab. PMID: 18438226; PMCID: PMC4021014.
11. Mazzetti SA, Kraemer WJ, Volek JS, Duncan ND, Ratamess NA, Gómez AL, Newton RU, Häkkinen K, Fleck SJ. The influence of direct supervision of resistance training on strength performance. Med Sci Sports Exerc. 2000 Jun;32(6):1175-84. doi: 10.1097/00005768-200006000-00023. PMID: 10862549.
12. McClaran SR. The effectiveness of personal training on changing attitudes towards physical activity. J Sports Sci Med. 2003 Mar 1;2(1):10-4. PMID: 24616604; PMCID: PMC3937569.
13. Kritz, Matthew & Cronin, John & Hume, Patria. (2009). The Bodyweight Squat: A Movement Screen for the Squat Pattern. Strength & Conditioning Journal. 31. 76-85. 10.1519/SSC.0b013e318195eb2f.
14. Siewe J, Rudat J, Röllinghoff M, et al. Injuries and overuse syndromes in powerlifting. *Int J Sports Med* 2011; 32:703-11.
15. Keogh J, Hume PA, Pearson S. Retrospective injury epidemiology of one hundred one competitive Oceania power lifters: the effects of age, body mass, competitive standard, and gender. J Strength Cond Res. 2006 Aug;20(3):672-81. doi: 10.1519/R-18325.1. PMID: 16937982.
16. Raske A, Norlin R. Injury incidence and prevalence among elite weight and power lifters. Am J Sports Med. 2002 Mar-Apr;30(2):248-56. doi: 10.1177/03635465020300021701. PMID: 11912096.
17. Calhoon G, Fry AC. Injury rates and profiles of elite competitive weightlifters. J Athl Train. 1999 Jul;34(3):232-8. PMID: 16558570; PMCID: PMC1322916.
18. Winwood PW, Hume PA, Cronin JB, Keogh JW. Retrospective injury epidemiology of strongman athletes. J Strength Cond Res. 2014 Jan;28(1):28-42. doi: 10.1519/JSC.0b013e3182986c0c. PMID: 23669816.
19. Kerr ZY, Collins CL, Comstock RD. Epidemiology of weight training-related injuries presenting to United States emergency departments, 1990 to 2007. Am J Sports Med. 2010 Apr;38(4):765-71. doi: 10.1177/0363546509351560. Epub 2010 Feb 5. PMID: 20139328.
20. Kuorinka I, Jonsson B, Kilbom A, Vinterberg H, Biering-Sørensen F, Andersson G, Jørgensen K. Standardised Nordic questionnaires for the analysis of musculoskeletal symptoms. Appl Ergon. 1987 Sep;18(3):233-7. doi: 10.1016/0003-6870(87)90010-x. PMID: 15676628.

How to cite this article: Mukesh Shinde, Fatima Memon, Pradnya Mahajan, Shruti Chaudhari. Prevalence of musculoskeletal disorders in gym trainers in Jalgaon city - a cross-sectional study. *Galore International Journal of Applied Sciences & Humanities*. 2025; 9(2): 35-42. *DOI: https://doi.org/10.52403/gijash.20250206*

******