Original Article

Comparison of the Lifestyle of Young Female Athletes with and without Dysmenorrhea

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Abstract

Dysmenorrhea is painful cramps of the uterus during menstrual cycle. This study examined the prevalence of dysmenorrhea among female athletes and compared the lifestyle of athletes with dysmenorrhea to those without dysmenorrhea. 200 young female athletes participated in the study, out of which 83.5% athletes experienced dysmenorrhea. By using lifestyle questionnaire, findings indicated that only 30% of women without dysmenorrhea had a poor personal relationships and poor work satisfaction as compared to 62.27% population with dysmenorrhea. Most athletes with dysmenorrhea reduced their physical activity (78.44%) during menses. 72.72% of athletes without dysmenorrhea had normal eating habits whereas athletes with dysmenorrhea had irregular meal times or used to skip their meals.By using personal-social questionnaire, findings indicated that most of the female athletes with dysmenorrhea hadeffect on physical functioning (68.26%), body pain (91.61%), vitality (64.67%), social functioning (68.26%), mental health (60.28%) and general health (65.26%). It is concluded that dysmenorrhea influences competitor's quality of life, social conduct, dietary patterns, and their productive tasks. To prevent or reduce the incidence of dysmenorrhea, comprehensive lifestyle assessment, preventive health intervention, knowledge and awareness should be raised in female athletes through proper lifestyle education and health promotion measures.

Keywords: Dysmenorrhea, Lifestyle, Prevalence,Young female athletes

Introduction

Dysmenorrhea is derived from the Greek words "dys" which means problematic or difficult, "meno" which means month, and "rrhea" which means stream or flow [(1)]. It is a gynecological condition that affects more than 50% of females[(2)].

Dysmenorrhea is characterized by crampy pelvic pain beginning shortly before or at the onset of menses and lasting 1–3 days[(3)]. Some 2–4 days before menstruation begins, prostaglandins proceed into the uterine muscle where they build up quickly at menstrual onset and act as smooth muscle contractors that aid in the expulsion of the endometrium [(4)].

Depending on the degree of pain experienced, dysmenorrhea can be classified as mild, moderate, or severe [(5)]. Mainly dysmenorrhea is of two types primary and secondary. Primary dysmenorrhea is

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one of the common complaints in young females and is defined as painful menstruation in absence of pelvic pathology [6,7]. Secondary dysmenorrhea is the pain of menstruation resulting from underlying pelvic pathologies [8]. Asymptomatic females do not have endometrialproduction of prostaglandins whereas females with primary dysmenorrhea have greater endometrial production of prostaglandins [9].

Primary dysmenorrhea occurs when the ovulation cycle is fully established which is 1 to 2 years after menarche [10]. It occurs when the production of endometrial prostanoids is increased or unbalanced during the menstruation cycle. Menstrual pain is common in young females in their teens and early adult life, and it affects around three-quarters of all females during their reproductive life [11]. The characteristic symptoms of Primary dysmenorrhea are colicky and cramps spasms of pain below the belly button, occur within 8–72 hours of the menstruation cycle, and peaking as menstrual flow increases within the first few days [12]. 60% to 90% is the overall prevalence of primary dysmenorrhea among adolescent girls and decreases with age[5]. The symptoms such as diarrhea, dizziness, nausea, tiredness, vomiting, irritability, and headache are also seen. These symptoms appear during or before menstruation and remain for up to three days after menstruation, with the intensity diminishing after the first day [13].

Smoking, alcohol consumption, abnormal menstrual flow, low body mass index, previous sanitization, psychological irritation, genetic effect, and premature menarche are the factors that influence the severity of dysmenorrhea [14, 15]. Smokers are more likely than nonsmokers to experience dysmenorrhea and lengthy, heavy menstrual periods [16]. Alcohol, coffee, and smoking have all been linked to dysmenorrhea, although the evidence is generally contradictory or inconclusive (14). The NSAIDs which are popular treatment for dysmenorrheal have various well-known adverse effects like nausea, breast soreness, and intermenstrual hemorrhage, dizziness, sleepiness, hearing and vision problems, and so on [17].

Lifestyle includes changeable and controllable behaviors that affect the individual's health either negatively or positively [18]. The World Health Organization defines health as the existence of physical, mental, and social well-being in addition to the absence of sickness, physical and mental weakness [19]. Quality of life is defined as individual perception, experiences, beliefs, and expectations based on the subjective phenomenon [20].

Long menstrual cycles, early menarche, poor sleep hygiene, a family history of dysmenorrhea, specific eating habits, alcohol and caffeine intake, lack of exercise, cigarette smoking, obesity, and having a stressful lifestyle are all risks factors for primary dysmenorrhea episodes [21-23]. According to recent research, one's lifestyle might cause tension and anxiety, as well as mental pressures that worsen dysmenorrhea[24].

Given the prevalence of dysmenorrhea and its significant effects on personal and social quality of life, as well as public acceptance of new lifestyle trends, knowledge of exercise and diet-related methods for dysmenorrhea management can be gained by comparing the lifestyles of athletes with and without dysmenorrhea. Some of the studies that have been carried out on this issue have shown unsatisfactory findings. As a result, this research was carried out to look at the link between lifestyle and dysmenorrhea in young female athletes in order to promote lifestyleimprovement therapies for these athletes.

Materials and Methods

This was a cross-sectional survey study conducted on young female athletes of Punjabi University Patiala, Punjab (India) selected through convenient random sampling. 200 young female athletes(either state, national or international level) having more than one year of experience in the age group of 18-35 years were included.Female athletes of school, college and district level as well as those with any gynecological disorders were excluded. The research proposal was approved by the Institutional Ethical Committee (IEC). Each participant was explained in detail the purpose, aim, objectives and

risks associated with the study and thereafter their written consent was obtained. The tool used was a questionnaire which consisted of questions related to the severityof dysmenorrhea, lifestyle, and personal-social domain[23, 25]. The items included were age at menarche, presence and absence of dysmenorrhea, its duration, irregularity, symptoms experienced during menstruation, family history, sickness absenteeism & quality of life-related (QoL) questions. QoL questionnaire used is reliable and valid [26]. Dataanalysis included mean, standard deviation and percentage analysis using SPSS version 20.

Results

The descriptive analysis, carried out in the present study, suggested that the mean age ofthe respondents was 21.84 (±1.81 SD)years. Theirbody weight was in normal range as the mean value of BMI was 22.44 kg/m^2. 74% of female athletes were of national-level, 17% state level and 9% of international level. Most often,the duration ofathletic experience was more than 7 years.

The prevalence of dysmenorrhea in young female athletes is 83.5%in the present study (Figure 1). 28.5% of the young female athletes, in the current study,had their onset of menarche at the age of 16 to 17 years, but 46% of athletes at the age of 14to 15 yearswhereas 18.5% of athletes at the age of 18 to 19 years.Thus, most of them had the history of delayed menarche.

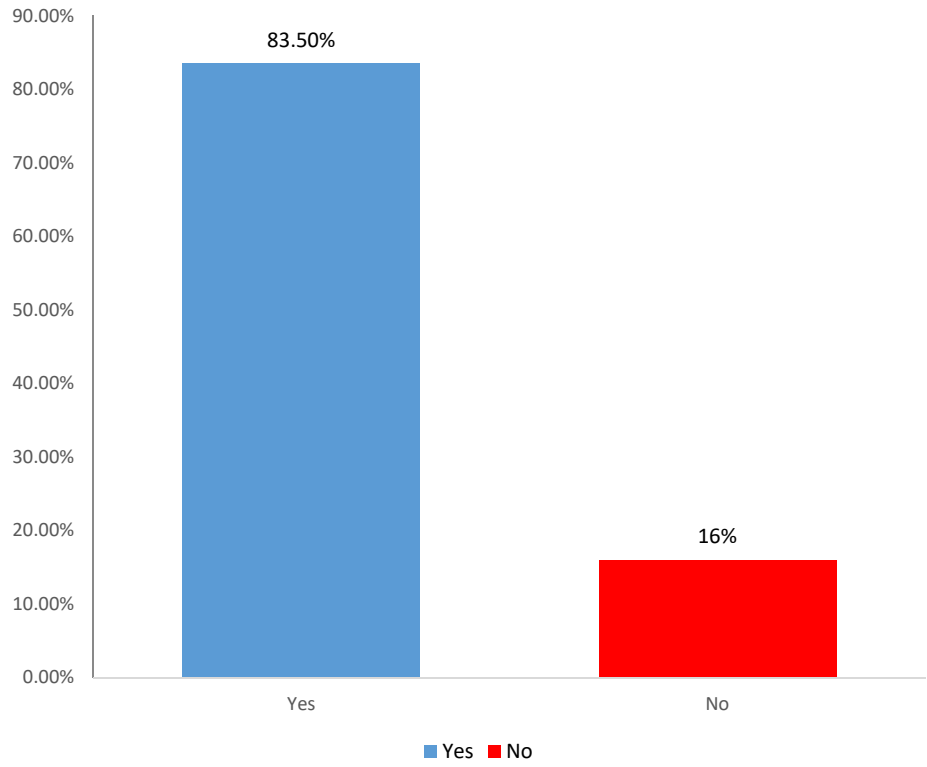

Figure 1: Distribution of young female athletes according to the experience of dysmenorrhea

The eating habits of athletes are presented in Figure 2 & Table 1. Only 9.09% of the female athletes without dysmenorrhea were obese, while 22.75% of female athletes with dysmenorrheawere obese as shown in Table 2.

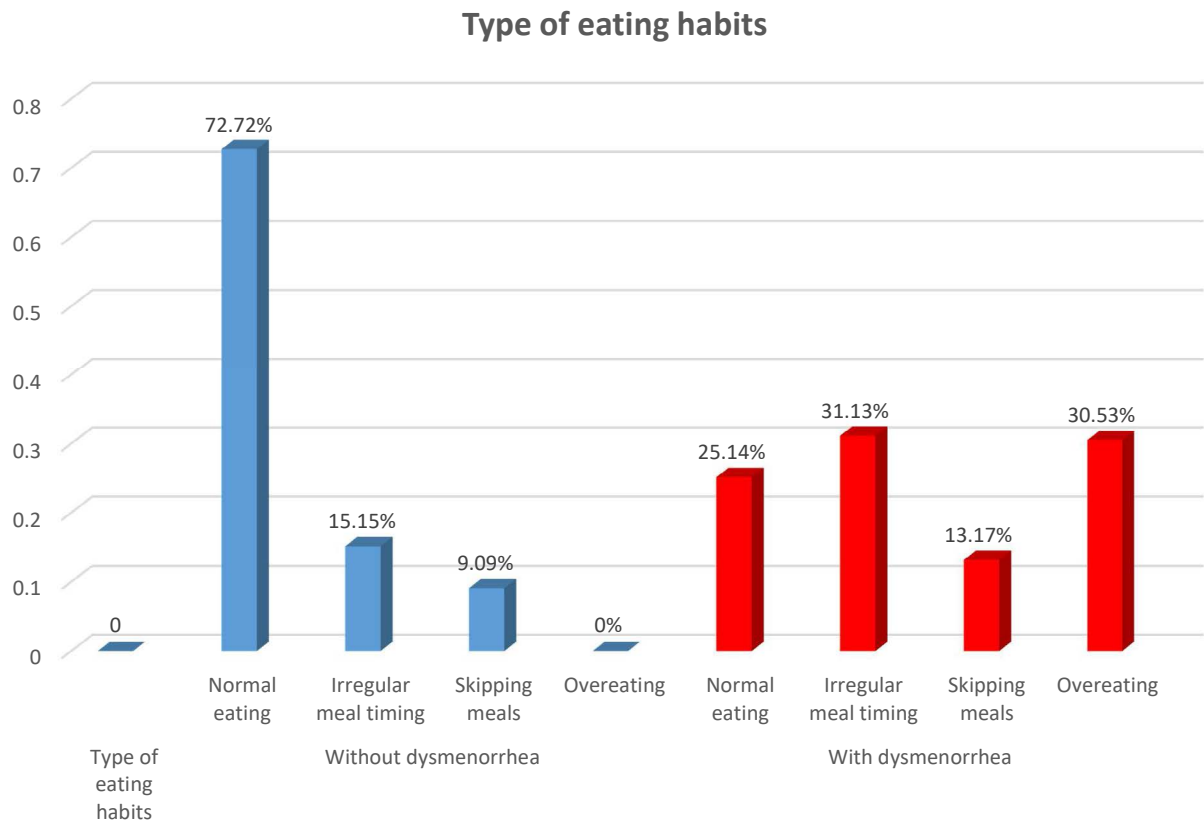

Figure 2: Comparison of the type of eating habits among respondents

Table 1. Comparison of having caffeinated drinks among female athletes

Caffeine containing drinks	**Athletes without dysmenorrhea**			**Athletes with dysmenorrhea**		
Tea	**Yes**	**No**	**Total**	**Yes**	**No**	**Total**
Frequency	18	15	33	102	65	167
Percentage	54.54	45.45	100	61.07	38.92	100
Coffee	**Yes**	**No**		**Yes**	**No**	
Frequency	19	14	33	131	36	167
Percentage	57.57	42.42	100	78.44	21.55	100
Coke	**Yes**	**No**		**Yes**	**No**	
Frequency	8	25	33	75	92	167
Percentage	24.24	75.75	100	44.91	55.08	100

Table 2. Comparison of intake of chocolate and obesity among female athletes

	Athletes without dysmenorrhea			**Athletes with dysmenorrhea**		
Chocolate	**Yes**	**No**	**Total**	**Yes**	**No**	**Total**
Frequency	20	13	33	130	37	167
Percentage	60.60	39.39	100	77.84	22.15	100
Obese	**Yes**	**No**		**Yes**	**No**	
Frequency	3	30	33	38	129	167
Percentage	9.09	90.90	100	22.75	77.24	100

Table 3 presents the comparison of the lifestyle of athletes with and without dysmenorrhea.It was seen that only 30.30% of the athletes without dysmenorrhea had poor personal relationshipand poor work satisfaction.

Table 3. Comparison oflifestyle among female athletes

Poor personal relationship	Athletes without dysmenorrhea			Athletes with dysmenorrhea		
	Yes	No	Total	Yes	No	Total
Frequency	10	23	33	104	63	167
Percentage	30.30	69.69	100	62.27	37.27	100
Poor work satisfaction	**Yes**	**No**		**Yes**	**No**	
Frequency	10	23	33	88	79	167
Percentage	30.30	69.69	100	52.69	47.30	100
Decreases confidence	**Yes**	**No**		**Yes**	**No**	
Frequency	12	21	33	102	65	167
Percentage	36.36	63.63	100	61.07	38.92	100

Figure 3 suggeststhat 54.54% athletes without dysmenorrhea reduced their physical activity during menses whereas frequency of such athletes with dysmenorrhea was much greater (78.44%). With respect to type of physical activity, most of the females without dysmenorrhea used to perform jogging during the menses while athletes with dysmenorrhea preferred walking during menses.It was discouraging to observe that a handful of respondents were involved in yoga practice (Table 4). Additionally, absent from work during menses and the comparison of the domains status of the respondents is shown in Figure 4 and Table 5 respectively.

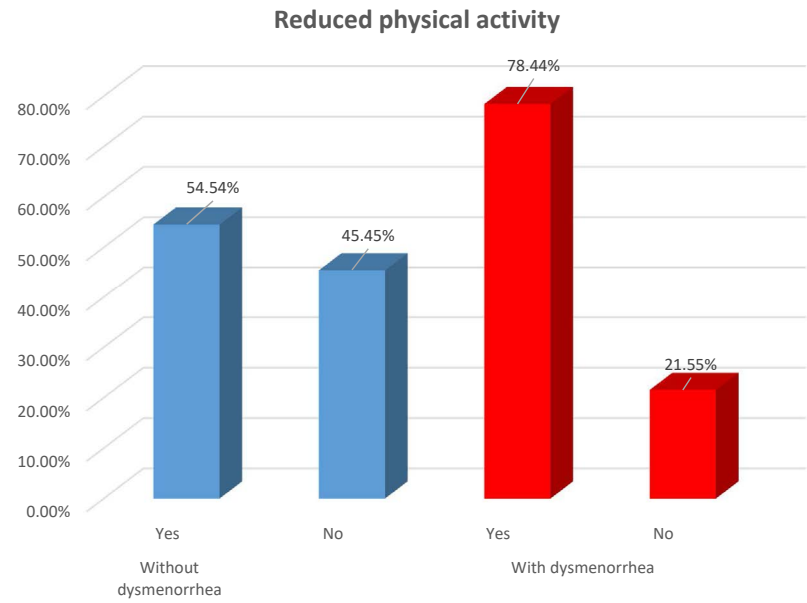

Figure 3: Comparison of the reduced physical activity in respondents

Table 4. Comparison of type of physical activity among female athletes

Type of physical activity	Athletes without dysmenorrhea					Athletes with dysmenorrhea				
	Dancing	Jogging	Walking	Yoga	Total	Dancing	Jogging	Walking	Yoga	Total
Frequency	7	18	6	3	33	44	50	58	15	167
Percentage	21.21	54.54	15.15	9.09	100	26.34	29.94	34.73	8.98	100

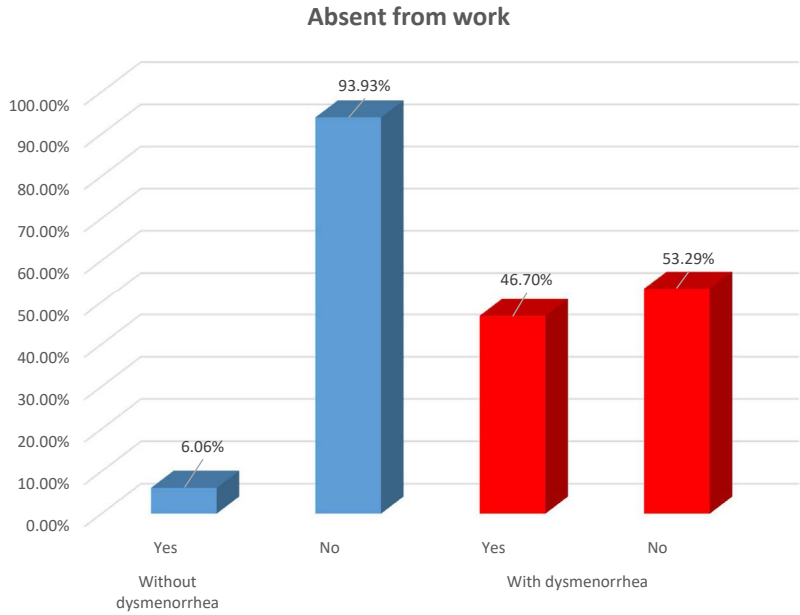

Figure 4: Comparison of absence from work during menses in respondents

Table 5. Comparison of the domains status among female athletes

Disturb physical functioning	**Athletes without dysmenorrhea**			**Athletes with dysmenorrhea**		
	Yes	**No**	**Total**	**Yes**	**No**	**Total**
Frequency	12	21	33	114	53	167
Percentage	36.36	63.63	100	68.26	31.73	100
Body pain	**Yes**	**No**		**Yes**	**No**	
Frequency	20	13	33	153	14	167
Percentage	60.60	39.39	100	91.61	8.38	100
Affectvitality	**Yes**	**No**		**Yes**	**No**	
Frequency	10	23	33	108	59	167
Percentage	30.30	69.69	100	64.67	35.32	100
Affect social functioning	**Yes**	**No**		**Yes**	**No**	
Frequency	7	26	33	114	53	167
Percentage	21.21	78.78	100	68.26	31.73	100
Affect mental health	**Yes**	**No**		**Yes**	**No**	
Frequency	9	24	33	99	68	167
Percentage	27.27	72.72	100	59.28	40.71	100
Affect general health	**Yes**	**No**		**Yes**	**No**	
Frequency	4	29	33	109	58	167
Percentage	12.12	87.87	100	65.26	34.73	100

Discussion

The findings of present study show that 50% of the female athletes had delayed menarche which was supported by a prior study in which the players of different sports like swimmers, gymnasts and tennis players also experienced delayed menarche [27]. The interval between the age at maximal peak velocity of height and the age at menarche was used to scientifically establish the delayed menarche of female athletes.The UK reference data is almost 20 years old, therefore this may no longer reflect contemporary menarche ages.

In the present study, a very high percentage of female athletes i.e. 83.5% experienced dysmenorrhea which was similar to a study conducted on University students in Turkey with 85.7% of dysmenorrhea [28]. There are various studies where prevalence of dysmenorrhea ranged from 16% to 91%. The smaller prevalence of 16% of dysmenorrhea was found in a study conducted on Japanese women aged between 18-51 years which may be attributed to the study's short duration (1 month) andpossible underreporting of moderate menstrual discomfort [29] whereas other studies reported higher prevalence [30-33]. In the present study, it was found that 66.2% of athletes

with dysmenorrhea described their pain as severe and moderate, in line with the study conducted on Canadian women[34].

In the current study, various factorslike diet, physical activity, stress, and social interactions influenced dysmenorrhea in both the groups. It was noted that dysmenorrhea was less severe when athletes had a good dietary level. Also the eating habits were compared and it was discovered that athletes with dysmenorrhea had poor eating habits, missed their meals, and had inconsistent meal timings, all of which had an impact on their lifestyle, practice, and injury risk.The majority of female students (52.6%) who consistently ate breakfast had a lower proportion of having primary dysmenorrhea than those who skipped breakfast, according to the findings of one study. Female college students who ate breakfast seldom had a 0.02 times greater incidence of primary dysmenorrhea than those who ate breakfast often [35]. It is backed up by a study where it was found that eating a regular breakfast is a key sign of a healthy lifestyle and has a positive impact on physical and psychological well-being [18].

In the present study, it was also discovered that athletes without dysmenorrhea had better personal connections, job satisfaction, confidence, and focus levels, and were less likely to miss practice than athletes with dysmenorrhea. This is supported by another study done on Spanish female university students where it was found that females with dysmenorrhea experienced lower quality of life[33]. Severe dysmenorrheic pain reducedQoL in women with dysmenorrhea, compared with their own pain-free follicular phase and compared withcontrols in a study conducted on women [36]. A previous studysuggested that primary dysmenorrhea was a leading cause of absenteeism in colleges and had negative effects on young girls' quality of life, but primary and secondary dysmenorrhea were not differentiated[37]. Dysmenorrhea is a disorder that causes persistent pelvic discomfort and has serious physical, emotional, and financial consequences for people [32]. In the present study athletes with dysmenorrhea, had lower scores on social dimensions such as social functioning, vitality, bodily pain, physical functioning, mental health, and overall health which is supported by a similar study where women with menstrual symptoms had significantly lower scores for all domains of the SF-36[37]. Absenteeism (28-48%) and perceived quality of life losses are common among adolescent females due to dysmenorrhea illness. Dysmenorrhea is the leading cause of time missed from work and education in the United States [38]. Dysmenorrhea had negatively impacted their quality of life, job, and psychological well-being.

As per the present study, athletes with more practice hours had less severe dysmenorrhea than those with less practice hours. The symptoms of dysmenorrhea are thought to be alleviated by exercise. The findings are supported by astudywhere exercise was commonly promoted as a therapy for menstrual cramps; it may intervene through increased blood flow, improved metabolism, stimulation of beta-endorphins, and stress reduction [39]. Another potential reason is that aerobic exercise works by diverting blood away from the viscera, resulting in reduced blood congestion in the pelvic region during menstruation [40]. Sports club activity levels were found to be inversely associated with the prevalence of severe dysmenorrhea in a study conducted on Japanese female junior high school students[41]. Exercise was found to be most effective in the prevention of dysmenorrhea when it began before the first menstruation and remained a fixed part of the adult's lifestyle [42].

Thus, it can be stated that the prevalence of dysmenorrhea among females was higher and young female athletes with dysmenorrhea had poor dietary and lifestyle habits than athletes without dysmenorrhea. Therefore, healthy nutrition habits should be adopted to alleviate everyday stress and manage immune system changes. Recreational activities like listening to music, meditation, and aerobic exercisecan be utilized by females from the beginning to improve their quality of life.

Conclusion

The findings of the present study concluded that more than half of the female athletes experienced

dysmenorrhea.Young female athletes with dysmenorrhea had poor eating habits as compared to their peers without dysmenorrhea. It was also revealed that athletes with dysmenorrhea experienced poor personal relationships, poor work satisfaction and loss of concentration, decreased confidence, and absence from work in comparison to females without dysmenorrhea.

Ethical Approval

The study was approved by Departmental Research Board (DRB) via reference number 1168M/PT and Institutional Ethical Committee (IEC) of Punjabi University, Patiala via number 4/35/IEC/PUP/2022.

Limitations

The sample size was small and the study was conducted in a small geographical area which can't be generalized to entire population.

The sample was selected through convenient sampling which could result in selection bias.

Recommendations

The future study can be conducted on a larger sample to generalize the results to entire population. The effect of additional factors like training intensities can also be considered.

Disclosure Statement

- No potential conflict of interest was reported by the author(s).
- Data availability statement
- The data that support the findings of this study are available from the corresponding author, upon reasonable request.
- Additional information

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