

BARRIERS AND FACILITATORS OF MARATHON TRAINING IN KAZAKHSTAN

by

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Submitted to the School of Medicine

in partial fulfillment of the requirements for the degree

of

Master of Sport Medicine and Rehabilitation

at the

NAZARBAYEV UNIVERSITY

April 2023

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ABSTRACT

Purpose: To examine the barriers and facilitators of marathon training among non-elite athletes in Kazakhstan.

Methods: A cross-sectional survey was conducted using a validated questionnaire on a purposely selected sample of 93 marathon runners who had marathon training in Kazakhstan. Data were analyzed using the R program, R studio. Descriptive statistics and bivariate analysis were done.

Results: Of a total of 93 participants, 46% of them were female runners and 53% were males. The mean age of participants is 29.85 and the standard deviation of 8.26. The vast majority of participants were Kazak and Muslim, 84%. Almost 91% of respondents live in urban areas. Prominent barriers to marathon training were Lack of time, Fear of getting injured, Bad weather conditions, Current health conditions, and no suitable facilities. Facilitators included enjoying and having fun, learning new skills and experiences, gaining more self-confidence, and making new friends and support from the family. A significant association was determined between occupation and health barriers, and personal beliefs/motivation($p<0.05$). There was a statistically significant association between encouragement and residence, occupation, working with a coach, and support from the workplace($p<0.05$).

Conclusion: The results indicated that marathon runners may benefit from a supportive and sport-friendly environment. Therefore, marathon organizers and health promotion organizations should do enjoined work to develop new health promotion programs and create physical activity supportive groups to increase physical activity and marathon participation.

Keywords: barriers, facilitators, marathon training, health promotion

INTRODUCTION

Marathon is a 26.2-mile running event, which makes the available extreme athletic experience for non-professional runners. Full marathon training programs recommend running 4-5 times a week, a total of 40 and 50 miles (Bauer, 2022). One of the most important factors in maintaining people's health is physical activity. Recent studies identified that 31% of adults are physically inactive in Central Asia (Yeung & Johnston, 2019). Marathons are the main segment in the physical activity and health promotion industry. However, exists different types of barriers for doing physical activity and marathon training. There are personal barriers (lack of self-motivation, insufficient time, shyness, cost, transportation, etc) and environmental barriers (traffic, pollution, crime, community, social environment). Moreover, there exist facilitators of physical activity such as understanding the importance and benefits of physical activity, social acceptance, and companies funding for marathons.

This research is going to identify the barriers and facilitators of marathon training in Kazakhstan. Almaty marathon results are chosen as the database of the research, as it is the largest marathon not only in Kazakhstan but also in Central Asia. Almaty Marathon has been held annually since 2012, on the last Sunday of April in the city of Almaty, Kazakhstan (Результаты, 2022). This marathon is the largest sporting event in Central Asia and has been a member of the Association of International Marathons and Distance Races (AIMS) since 2013 (Almaty Marathon, 2022). The marathon tracks are certified according to the AIMS rule in category B, but world records are not recorded on it, since there are elevation changes at a distance that do not meet the IAAF requirements, world records are not recorded on it. The main goal of the marathon is to contribute to the improvement of the nation, promoting an active healthy lifestyle. The Almaty Marathon is also known as the Charity Marathon. According to tradition, part of the funds raised goes to charity. Almaty marathon has 6 disciplines: a traditional marathon 42 km, a half marathon 21 km, a satellite race 10 km, Nordic walking 10 km, a

children's race 3 km, and a corporate relay Ekiden (Almaty Marathon, 2022). According to Matt Delmont's research, 'marathon training is more difficult than running a marathon itself (Delmont, 2022). Therefore, the research examines the barriers and facilitators of marathon training among non-elite athletes in Kazakhstan.

LITERATURE REVIEW

According to the Cambridge dictionary barrier is 'something that prevents something else from happening or makes it more difficult. In the case of marathons, possible barriers to marathon training would be personality, equipment, environment, and finance. Facilitators are organizations or someone that helps to make and do something happen easily (facilitator, 2022). According to the research organizations and companies, marathon organization teams and health promotion groups are the possible enablers of the marathon. There are different studies that identified barriers and facilitators of physical activity among different ages and social groups. Research has found that training related injuries are the main barriers to marathon runners, as well-being and health conditions are the most important predictors of physical activity. (Maughan and Miller, 1983 and De Mille. et al, 2022). Another research by Hilary et al also came to the same conclusion, mental and physical health barriers such as risk of injury, fear of falling are the most frequent barriers.

A. M. Porter discussed the adverse weather conditions on marathon running and concluded that the race should be canceled if there would be environmental thresholds. Rona Macniven M.Sc. et al research done among Australians to examine the perceptions of the Torres Strait island community to running. According to the research results, there were 2 types of barriers revealed: personal and environmental. The research concluded that personal shyness is the main barrier to physical activity and running among Indigenous Australians (Macniven et al., 2018). This finding of the study was in agreement with JM Matheri's research finding, that personal barriers of the individuals are the predictor of physical activity. Moreover, Rona Macniven M.Sc.

et al suggested creating strategies to decrease personal shyness in designing physical activity promotion programs. From these research findings, it can be concluded that every culture and community is different and needs to develop different strategies for health and marathon running. Moreover, there was limited information about the trends of the Almaty marathon and the barriers and facilitators of marathon training. Therefore, this research project focuses on the barriers and enablers of marathon training in Kazakhstan and gives suggestions for the health promotion of the Kazakh nation.

RATIONALE

Physical inactivity is the main health risk factor in the world. An active lifestyle can help to decrease the risks of chronic disease. Marathons are effective tools for promoting a healthy and active lifestyle. To attract more people to marathons, the barriers and facilitators of marathon training should be identified.

Moreover, as was mentioned in the introduction part, the marathon training process is the most difficult part of marathon running. Identifying barriers and facilitators of marathon training will help to make marathon training more enjoyable and effective.

OBJECTIVE/RESEARCH QUESTION/RESEARCH HYPOTHESIS

OBJECTIVE: To examine the barriers and facilitators of marathon training among non-elite athletes in Kazakhstan.

RESEARCH QUESTION: What are the barriers and facilitators of marathon training among non-elite athletes in Kazakhstan?

SPECIFIC AIMS

1. Ethical approval

a) Approval from Institutional Review Board (IRB)

2. Recruitment of participants and data collection

a) Download the results of the Almaty marathon 2022 from the official website of the Almaty Marathon (Результаты, 2022)

b) Contacting the 200 marathon finishers of the Almaty marathon by considering equitable representation criteria: age, gender, training place

c) Sending a questionnaire and recruiting consent from the participants

3. Analysis of collected data

a) analyzing received data

b) drawing conclusions about the barriers and facilitators of marathon training in Kazakhstan

EXPERIMENTAL PLAN

Ethical considerations

The study was ethically approved by the NUSOM Ethics Committee in Astana, Kazakhstan (Ref. NOV#1).

Study participants

The cross sectional questionnaire was conducted in the period from January to February, 2023. Study participants included marathon runners at least 18 years old, and who trained for the marathons in Kazakhstan. Marathon runners who had training abroad were excluded from the study, as the research is focusing on marathon training in Kazakhstan.

Study instrument

Before the data collection, 15 marathon runners were pre-tested. According to the comments of pre-test respondents the adjustments were fulfilled.

The study was conducted online through social media (e.g. LinkedIn, VK, Instagram and Facebook) using convenience sampling and snowball sampling techniques. In order to increase the response rate to the survey, marathon participants contacted through their social media accounts. Runners' names are publicly available on marathon organizers website: <https://www.almaty-marathon.kz/en/results/>. To conduct the survey, Google Forms were used, the survey available in 3 languages. Translation of the survey was validated by the research team.

The questionnaire overall has 40 questions and consists of 4 sections. First section includes questions on socio-demographic information: age, gender, residency and family, education.

The second section includes specific questions about marathons and performance time. The third section of the survey assesses the feelings about the barriers of the marathon training process through a 4-level Likert scale. The last section assesses the feelings about facilitators of

the marathon training process, also by 4-level Likert scale. Questions of section 3 and 4 are created on the basis of literature review. The questionnaire was developed after reviewing the existing literature on facilitators and barriers of marathon training.

Data analysis

Data extracted from Google forms in the form of Microsoft Excel, statistically analyzed with the R program, in R studio. The categorical variables of the data defined with frequencies and percentages, and continuous variables were described by standard deviation and mean. For bivariate analysis new variables were created by joining variables which are close to each other though meaning. For barriers, 3 variables were created: health barriers, personal beliefs, conditions to running. For the facilitators, also 3 variables were created, they were: personal motives, support and access to facilities.

In bivariate analysis, Pearson's correlation test and ANOVA test were used. Pearson's correlation test was used to see the relationship of outcome variables and continuous variables. Analysis of variance (ANOVA) was used to find if the means of 2 and 3 groups significantly differed from each other.

Survey had open-ended questions, they were analyzed through a content analysis method, to define the frequencies of concepts that occur in data. Inductive coding method was used to create codes based on the data itself. Codes come from the data. The data was coded manually.

RESULTS

Generally, 93 marathon runners participated in the study. Table 1 represents the summary of the socio-demographic characteristics of study participants. The mean age of participants is 29.85 and the standard deviation of 8.26. A total of 93 participants and 46% of them were female runners and 53% were males. The vast majority of participants were Kazak and Muslim, 84%. Almost 91% of respondents live in urban areas. One-third of the participants were from Astana. The percentage of married and single participants was approximately equal. The majority of

participants had a high educational background, 98%. More than half of the participants (60%) work full-time. 35 respondents ran a marathon for the first time. 64% of participants were trained for 5-10 hours in one week. The percentage of participants who work with coaches and get support from the workplace was nearly close, 31% and 40%.

Table 1. Socio- demographic characteristics of study participants

Variables	Category	Frequency(percentage) Mean ±SD
Age		29.85±8.26
Gender	Female Male	42(46%) 48(53%)
Nationality	Kazakh Russian other	76(84%) 6(6%) 9(10%)
Religion	Muslim Christian other	76(84%) 4(4%) 11(12%)
Residence	Rural Urban	8(9%) 83(91%)
Region	Astana Almaty Shymkent other	32(36%) 24(27%) 17(19%) 16(18%)
Marital status	Single Married Divorced	44(48%) 42(46%) 5(5%)
Education	High school Undergraduate Graduate	1(1%) 1(1%) 89(98%)
Occupation	Student Full time work Part time work Unemployed	23(25%) 54(60%) 11(12%) 2(2%)
Number of marathons	1 2 3	35(40%) 13(14%) 12(13%)

	4 5	6(6%) 21(24%)
Training time	5-10 hours 11-15 hours 16-20 hours 21-25 hours 26-30 hours 30< hours	58(64%) 26(29%) 4(4%) 1(1%) 0 1(1%)
Working with coach	Yes No	29(31%) 62(68%)
Support from workplace	Yes No	35(40%) 53(60%)

Table 2 represents descriptive statistics of barriers of marathon training. According to this frequency table main barriers were identified. Key barriers: Lack of time (33%), Fear of getting injured (35%), Bad weather conditions (21%), Current health conditions (15%), No suitable facilities (15%).

Table 2. Descriptive statistics of barriers of marathon training

Variable	Strongly agree Frequency (percentage)	Agree Frequency (percentage)	Disagree Frequency (percentage)	Strongly disagree Frequency (percentage)
Fear of getting injured	27(35%)	20(25%)	19(25%)	11(14%)
Transportation issues(lack of public transport)	5(7%)	11(16%)	24(35%)	28(41%)
Current health conditions (injury & disability, Covid-19, others)	11(15%)	19(27%)	23(33%)	17(24%)
Had long Covid syndrome	7(10%)	8(12%)	24(36%)	27(41%)
Lack of time	25(33%)	23(31%)	15(20%)	12(16%)

Do Not have right equipments or clothes	8(12%)	19(28%)	25(37%)	16(24%)
There is no one to do it with	8(12%)	8(12%)	27(39%)	26(38%)
I am not a sporty type	4(6%)	8(12%)	19(28%)	36(54%)
No suitable facilities	12(17%)	16(23%)	19(28%)	22(32%)
Bad weather conditions	16(21%)	21(28%)	24(32%)	15(20%)
My religious beliefs/customs restrict training	4(6%)	4(6%)	20(29%)	40(59%)
My shyness is barrier for training	6(9%)	4(6%)	19(28%)	39(57%)

The results of Table 3 showed descriptive statistics of facilitators of marathon training. 80% of respondents strongly agree that enjoying and having fun is a facilitator of marathon training.

Learning new skills and experience, gaining more self-confidence, and making new friends have approximately similar frequencies, 75% and 76%, 71%. Moreover, support from the family is identified as another key facilitator of marathon training among respondents of the study.

Table 3. Descriptive statistics of facilitators of marathon training

Variable	Strongly agree Frequency (percentage)	Agree Frequency (percentage)	Disagree Frequency (percentage)	Strongly disagree Frequency(p ercentage)
Enjoying and having fun	68(80%)	13(15%)	4(4%)	0
Learning new skills and experience	61(75%)	16(18%)	4(4%)	0

Gaining more self confidence	58(76%)	12(16%)	5(6%)	1(1%)
Making new friends	55(71%)	14(18%)	6(8%)	2(2%)
Encouragement from the family	43(58%)	20(27%)	9(12%)	2(3%)
Having access to suitable facilities	33(47%)	21(30%)	14(20%)	2(3%)
Special governmental programs (free access to facilities, free transportation cards, seminars with coaches)	25(36%)	6(9%)	19(27%)	19(27%)
Encouragement from the company where I work	21(30%)	14(20%)	19(27%)	15(22%)

The bivariable analysis of outcome and independent variables is represented in Table 4. Pearson's correlation coefficient is calculated to see the strength of the linear relationship between age and outcome variables (health barriers, personal beliefs/motivation, and conditions for training). There was no significant association between age and outcome variables ($p < 0.05$).

ANOVA (Analysis of Variance) statistical technique used to compare the means of two or more groups of data to determine whether they are significantly different from each other. Based on ANOVA analysis, a significant association was determined between occupation and health barriers, and personal beliefs/motivation ($p < 0.05$). Moreover, gender and residence were statistically significant for personal beliefs/motivation. There was no correlation found between conditions for training and independent variables.

Table 4. Demographic characteristics of study participants by barriers of marathon training (Bivariate analysis)

Variable	Health Barriers p-value	Personal beliefs/motivation p-value	Conditions for training p-value
Age, Pearson's r	0.28	0.06	0.20
Gender, Female Male	0.68	<0.03	0.08
Nationality, Kazakh Russian other	0.98	0.65	0.50
Religion, Muslim Christian other	0.96	0.56	0.21
Residence, Rural Urban	0.53	<0.05	0.08
Region, Astana Almaty Shymkent	0.12	0.20	0.14
Marital status, Single Married Divorced	0.17	0.17	0.56
Education, High school Undergraduate Graduate	0.08	0.59	0.17
Occupation, Student Full time work Part time work Unemployed	<0.01	<0.03	0.12
Number of marathons, 1 2 3 4 5	0.12	0.23	0.22

Training time, 5-10 hours 11-15 hours 16-20 hours 21-25 hours 26-30 hours 30< hours	0.46	0.24	0.21
Working with coach, Yes No	0.75	0.16	0.33
Support from workplace, Yes No	0.79	0.62	0.43

According to the ANOVA test, personal motivation is correlated with nationality (Table 5). There was a statistically significant association between encouragement and residence, occupation, working with a coach, and support from the workplace. The outcome variable access to facilities is correlated with the variable region ($p < 0.05$).

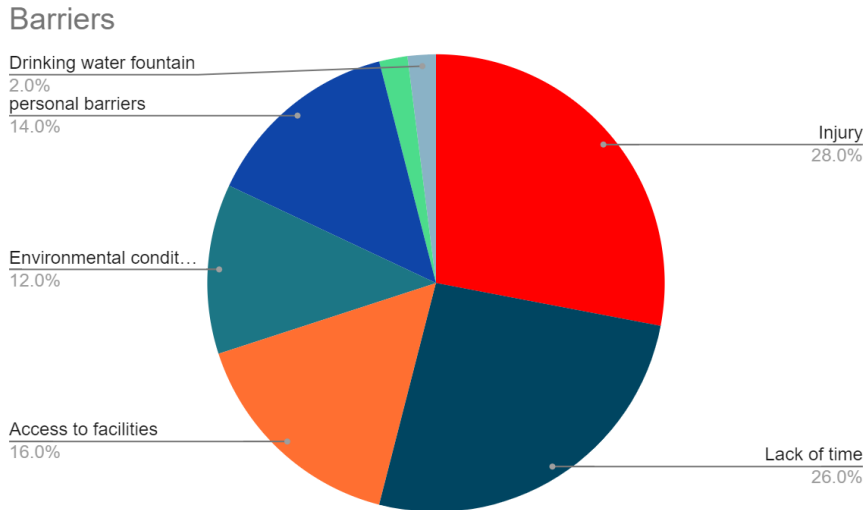
Table 5. Demographic characteristics of study participants by facilitators of marathon training (Bivariate analysis)

Variable	Personal motivation p-value	Encouragement p-value	Access to facilities p-value
Age,	0.06	0.41	0.46
Gender, Female Male	0.18	0.94	0.11
Nationality, Kazakh Russian Other	<0.02	0.41	0.82
Religion, Muslim Christian other	0.28	0.17	0.63
Residence, Rural	0.23	<0.01	0.49

Urban			
Region, Astana Almaty Shymkent other	0.46	0.12	<0.03
Marital status, Single Married Divorced Widowed	0.11	0.39	0.45
Education, High school Undergraduate Graduate	0.80	0.29	0.65
Occupation, Student Full time work Part time work Unemployed	0.42	<0.03	0.44
Number of marathons, 1 2 3 4 5	0.94	0.84	0.88
Training time, 5-10 hours 11-15 hours 16-20 hours 21-25 hours 26-30 hours 30< hours	0.88	0.20	0.11
Working with coach, Yes No	0.07	<0.03	0.83
Support from workplace Yes No	0.85	<0.02	0.33

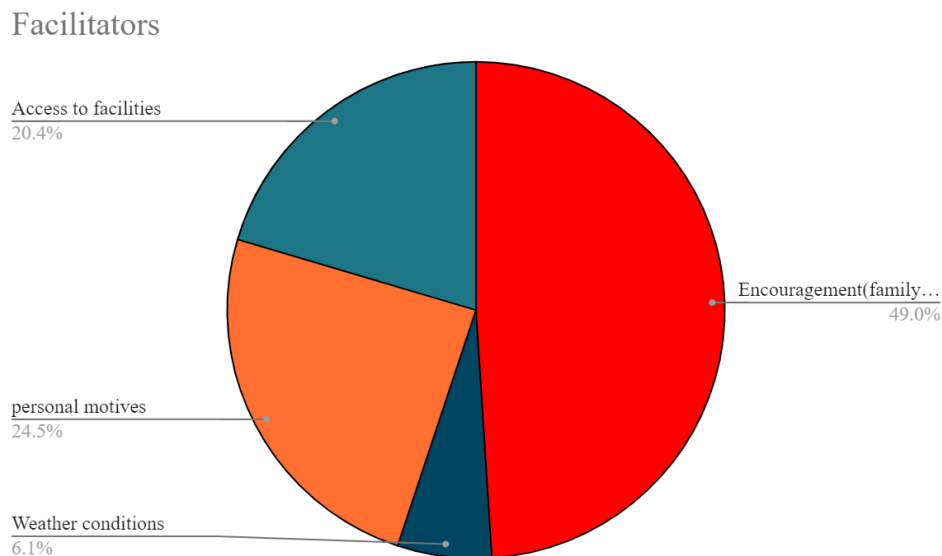
Chart 1 represents descriptive statistics of identified barriers through the open-ended question. The most frequently written barriers were injury (28%), lack of time (26%), and access to facilities (16%).

Chart 1. Open-ended question descriptive statistics of barriers



The descriptive statistics of identified facilitators were shown in chart 2 below. According to the frequency table, prominent facilitators were encouragement and support from family, friends, and team (49%) and personal motives (24.5%).

Chart 2. Open-ended question descriptive statistics of facilitators



DISCUSSION

The main aim of this study was to identify barriers and facilitators of marathon training among non- elite athletes in Kazakhstan. To that end, the questionnaire was conducted among marathon runners who had training in Kazakhstan. The results of the study showed a variety of personal and environmental, health barriers and facilitators of marathon training. Associations of barriers and facilitators with socio-demographic characteristics were also tested, for further research and action plan.

Fear of getting injured and other barriers connected to health were the most frequently chosen barriers among respondents of the study. Many other studies also agree with the finding of the current research, as health is the main predictor of physical activity (Bethancourt et al, 2014 and De Mille. et al, 2022). Running related injuries during the preparation period for the race prevented the race participation and completion of the marathon. Injuries are common among runners, moreover some runners had more than one injury during marathon training (De Mille. et al, 2022).

Study results showed that a significant percentage of runners perceived barriers in lack of time, bad weather conditions and no suitable facilities. Lack of time was a prominent barrier of physical activity in several quantitative and qualitative studies, however, in Hilary et. al's study, it was not mentioned as the barrier for doing sports (Duffey. et al, 2021). Bad weather conditions are also frequent barriers among respondents. Similar to this finding, research discussed adverse weather conditions on marathon and concluded to cancel the race in bad weather conditions (Porter). Another identified barrier is not having access to suitable facilities. Other studies also highlighted facilities as the barrier to physical activity (Bethancourt et al, 2014).

Open-ended questions also identified several barriers, the vast majority of them coinciding with the barriers in 4 likert scale questions. Only toilets and drinking water fountains were a new barrier in this finding.

General, current research found that enjoying and having fun, learning new skills and experience, making new friends, and support from the family were motivators for marathon training. Complementary to this finding, research found that support from family, peers and teachers most frequently reported facilitators of physical activity (Duffey. et al, 2021).

Public health organizations and marathon organizers need to understand that there are different factors that influence marathon training, personal, health, and environmental factors need to be considered in developing health promotion programs. We should create evidence-based policy action to give more opportunity for runners. Moreover, health organizations should create injury prevention programs specifically for runners. Another suggestion is to organize a friendly and supporting environment to increase marathon runners as support was the main facilitator of marathon training and doing physical activity.

Future research on marathon training and health promotion should use associations of socio-demographic factors with barriers and facilitators to identify gaps in creating new health policies. Furthermore, future research should explore testing physical activity promotion programs for Kazakh population to gain effective and evidence-based health and physical activity promotion programs.

Purposive sampling method was the limitation of this study. The results of this study cannot be representative. Also, study had low response rate and small sample size, it is the next limitation of the research. 90% of respondents were from urban areas and results cannot be generalized to the rural part of Kazakhstan. Lastly, the vast majority of respondents were Kazakhs, and results may vary for more ethnically diverse groups, and different socio-economic groups.

CONCLUSION

This study highlighted a variety of factors that influence marathon training of non-elite athletes in Kazakhstan. Lack of time and fear of getting injured were the most frequent barriers for marathon training while having fun and enjoying, getting support from family and making new friends were mostly chosen facilitators of marathon training.

The research represented several policy actions to increase marathon participation and make the training process more enjoyable, on the basis of identified barriers and facilitators of marathon training. Public health organizations and marathon organizations should work together to develop friendly and supporting sport communities to increase general physical activity and marathon participation.

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APPENDIX

Questionnaire

Part 1: Demographic questions

1. What is your current age? _____
2. What is your sex?
 - a) Female
 - b) Male
 - c) other
3. Please, indicate your nationality:
 - a) Kazakh
 - b) Russian
 - c) other, please specify _____
4. Which of the following best describes the area you live in?
 - a) Rural
 - b) Urban
5. Please specify your religion:
 - a) Muslim
 - b) Christian
 - c) Other
6. What is your marital status?
 - a) Single
 - b) Married
 - c) Divorced
 - d) Widowed
7. What is your educational Level?
 - a) Undergraduate
 - b) Postgraduate
 - c) High School
8. What is your occupation? _____
9. What is your speciality? _____
10. What is your geographic location?
 - a) Astana
 - b) Almaty
 - c) Shymkent
 - d) Other (please specify) _____

Part 2: Specific questions

1. How many marathons have you run? _____
2. How much time do you spend on training every week? _____
3. Your last performance time in a marathon _____
4. Do you work with the coach? a) Yes b) No
5. What kind of barriers do you face during the marathon training period? _____

Part 3: Feelings about barriers of marathon training

6. How do you feel about the following statements about barriers of marathon training?

Barriers of marathon training	Strongly agree	Agree	Disagree	Strongly disagree
Fear of getting injured				
Lack of transport				
Current health conditions (injury & disability, Covid-19, others)				
Lack of time				
Do Not have right equipments or clothes				
There is no one to do it with				
I am not a sporty type				
No suitable facilities				
Bad weather conditions				
My religious beliefs/customs restrict training				
My shyness is barrier for training				
Lack of knowledge about running				
Had long Covid 19 syndrome				

7. What kind of facilitators of training do you face during the marathon training period? _____

Part 4: Feelings about facilitators of marathon training

8. How do you feel about the following statements about facilitators of marathon training?

Facilitators of marathon training	Strongly agree	Agree	Disagree	Strongly disagree
Maintaining a healthy body				
Enjoying and having fun				
Learning new skills and experience				
Gaining more self confidence				
Making new friends				
Encouragement from the family				
Having access to suitable facilities				
Special governmental programs				
Encouragement from the company where I work				

9. Do you get support from your workplace to train for marathons?

a) Yes b) No

10. If YES, please specify what kind of support you receive from the company?