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Health Aspects of Amateur Long-Distance Running

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Abstract

Introduction: Running, as a generally accessible form of physical activity, is recognized as a popular means of preventing lifestyle diseases. Each year, an increasing number of people of various ages, progress of training, and physical fitness participate in mass running events.
Purpose: The study aims to identify the opinions of amateur long-distance runners regarding health.
Material: 140 individuals from several Polish provinces, approximately 30 years old.
Method: A proprietary questionnaire survey.
Results: The most important factor motivating the respondents to engage in long-distance running is the improvement of sports performance, followed by the need to relieve stress,

improve quality of life, and, to a lesser extent, health goals. According to most respondents, endurance-based long-distance running is healthy because it improves physical fitness, positively affects the cardiovascular and respiratory systems, enhances immunity, and is a way to relieve stress. Only a few respondents believe that running is not healthy. The main forms of preparation for half marathons and marathons among runners include warm-up exercises before the planned effort and strength and muscle stretching exercises. In the studied group of runners, past injuries do not diminish the satisfaction of engaging in long-distance running. Despite a significant number of respondents having experienced injuries in the past while practicing this sport, they still consider running to be healthy.

Conclusions: Long-distance running brings numerous health benefits. It improves physical fitness, positively affects cardiovascular function, including lowering blood pressure, significantly enhances sleep quality, and helps reduce stress, as confirmed by the respondent's opinions.

Keywords: long-distance running, physical activity, health

Introduction and Purpose of the Study

Running, a widely accessible form of aerobic physical activity, is recognized as a popular method for preventing lifestyle diseases. According to the recommendations of the World Health Organization and scientific societies (ESC, ACSM), dynamic endurance training confers numerous health benefits, including increased average life expectancy [1],[2].

Systematic and rational physical exercise, of at least moderate intensity (e.g., running, walking, cycling within 40-60% VO2 max), results in reduced resting and exercise heart rates and lowered resting blood pressure [3],[4],[5]. High values of maximum oxygen uptake (VO2 max) are indicative of high endurance capacity during prolonged efforts; therefore, VO2 max measurement is one of the primary criteria for assessing athletes' training levels [6],[7]. Endurance training decreases blood triglyceride levels, including LDL cholesterol fractions, while increasing HDL cholesterol fractions. It enhances tissue sensitivity to insulin and

improves glucose metabolism [8],[9],[10],[11],[12]. Physical activities involving large muscle groups promote weight reduction and enhance the motor characteristics of the musculoskeletal system [3]. Running helps strengthen bones by increasing their density, which is crucial for osteoporosis prevention [13].

An increasing number of individuals of various ages are observed running at their own pace on city sidewalks, park trails, and forest paths, covering planned distances as amateurs [14]. Students, professionals from various fields, and older adults for whom running has become a lifestyle, a trend, or a means to cope with pervasive stress, are frequently seen running [15],[16]. Regular running training can help mitigate symptoms of depression by improving mood [17],[18]. Increased physical activity can alleviate some psychotic symptoms and address comorbid conditions associated with psychotic disorders [19].

Some individuals strive to enhance their physical fitness concerning qualitative changes in the body, while others focus on covering substantial distances, imposing training regimens comparable to those of elite athletes.

The objective of this study was to identify the health-related perspectives of amateur long-distance runners.

Material and Methods

The study conducted in Warsaw included 140 long-distance runners, comprising 101 men aged 19-58 years (31.7 ± 9.3) and 39 women aged 18-65 years (33.6 ± 12.0). Most participants (55.7%) lived in cities with populations exceeding 100,000, while 19.3% resided in rural areas. Over half of the participants (53.6%) were single, and 61.4% had attained higher education. Regarding employment, 44.3% reported having static jobs, 40% had mixed roles, and 15.7% had dynamic jobs.

A diagnostic survey method was employed for this project. The research tool was a custom-designed questionnaire consisting of 20 closed and semi-open questions. The introduction to the survey included information on the study's purpose, assurances of response anonymity, and instructions for answering the questions. The first 10 questions gathered information about the demographic structure of the study group and their training practices, while the remaining questions pertained to the study's objective.

The results were analyzed both quantitatively and qualitatively. Statistical analysis involved hypothesis verification using both parametric and non-parametric tests: analysis of variance (ANOVA), median test, Kruskal-Wallis ANOVA by ranks, and Pearson's Chi-squared test. Statistical significance was determined at $p < 0.05$. The data analysis was conducted using the "STATISTICA 12.0" software [20].

Results

The respondents of the study were amateur long-distance runners, with half of them having trained for 1 to 3 years and one-third for 3 to 10 years (**Table 1**). The main reasons for engaging in this type of physical activity were the desire to improve sports performance (60.7%), relieve stress and improve quality of life (55%), and adopt a lifestyle (43.6%). A health-related goal was noted by one-third of the respondents. Assuming that the intention behind choosing this extreme discipline is the need to maintain and improve health, respondents were asked whether they believed that endurance long-distance running is healthy. An overwhelming majority responded affirmatively (89.3%), with 94.9% of women and 87.1% of men. The respondents cited the health benefits of long-distance running as improving fitness, strengthening the cardiovascular and immune systems, and providing a means to relieve stress. However, one in nine respondents believed that running is not healthy due to the significant strain it places on the heart and musculoskeletal system, as well as the frequent occurrence of pain-related issues.

No statistically significant differences were found between the respondents' assessments of the health benefits of long-distance running and their type of employment ($p=0.53$), training duration ($p=0.31$), or the number of training sessions per week ($p=0.17$).

Table 1. Training experience of the respondents

training experience of the respondents	men n=101		women n=39	
	n	%	n	%
less than 1 year	3	2,97	3	7,69
1-3 years	42	41,58	21	53,85
3-10 years	37	36,63	13	33,33
over than 10 years	19	18,81	2	5,13

According to the principles of endurance training and the specifics of the discipline, prior to the planned effort, 78.6% of participants performed a warm-up (regardless of training experience), 62.1% engaged in muscle stretching, and 45.7% conducted strength exercises. Achieving and maintaining a high level of aerobic capacity requires training cyclicity, which includes the number of training sessions per week, the duration of each session, and the distance covered. The obtained data are summarized in (**Table 2**).

Table 2. Training cycle of all respondents

training cycle of all respondents		men n=101		women n=39	
		n	%	n	%
number of training sessions in the week	every day	19	18,81	1	2,56
	5-6	29	28,71	11	28,21
	1-4	44	43,56	24	61,54
	quite irregularly	9	8,91	3	7,69
time of training session	approx. 20 minutes	1	0,99	1	2,56
	30-45 minutes	11	10,89	7	17,95
	approx. 1 hour	47	46,53	21	53,85
	1.5 hours or more	42	41,58	10	25,64
number of kilometers run in a week	less than 30 km	15	14,85	4	10,26
	30-50 km	33	32,67	22	56,41
	50-100 km	44	43,56	13	33,33
	over 100 km	9	8,91	0	0

The majority of respondents (81.4%) train on hard surfaces (asphalt, pavement, cobblestones, etc.) while using running shoes (93.6%). Over half of the runners (55.7%) monitor their heart rate with a heart rate monitor, with men slightly more likely to do so than women. A statistically significant difference was found in the use of these devices based on training experience ($p=0.003275$). Among those who have been running for 3-10 years, every second person monitors their heart rate; among those with 1-3 years of experience, every third person does so, and only one person among those training for less than a year does so.

An interesting distribution of data was obtained regarding the use of dietary supplements. A slight difference was found between the percentage of individuals who believe that any supplementation can be replaced by an appropriate diet (45%) and the percentage of respondents using dietary supplements (44.3%). Significantly more women (56.4%) than men (40.6%) believed in the benefits of a proper diet. It was demonstrated that the use of supplementation depends on the length of running experience ($p=0.012$).

A significant portion of the respondents (57.1%) answered affirmatively to the question of whether they undergo periodic medical examinations and use the services of physiotherapists and dietitians. Women (71.8%) paid more attention to this form of health control than men (51.5%). No statistically significant difference was found between the frequency of undergoing periodic medical examinations, using physiotherapists' services, and consulting dietitians, based on training experience ($p=0.95$). However, it is noteworthy that those who train for more than 10 years (61.9%) and those who have been running for 1-3 years (57.1%) and 3-10 years (56%) undergo medical examinations most frequently.

Discussion

The number of amateur long-distance runners and participants in marathons and half-marathons increases every year. In the studied group, the primary motivation for engaging in this sport was the desire to improve sports performance. Other reasons included the desire to relieve stress, improve quality of life, treat running as a lifestyle, and fulfill the need for competition. Health-related goals were not the main interest. Romanowska-Tołłoczko et al. obtained different results, with motivations organized hierarchically. They analyzed 98 long-distance runners aged 19-70 years, affiliated with clubs in southwestern Poland. For 74.4% of respondents, the main motivation was fitness, perceived as an indicator of health, though not objectively measured by medical examination or adherence to health training principles. Other

reasons included the need for achievement, health, relaxation, recognition, belonging to a group, superiority, and body shape (physical motivation) [21].

The increasing interest in mass street races and the openness of sports and recreational events make completing the 42.195 km marathon distance a goal for recreational marathoners. The trend of running and competition in extreme physical effort raises the question of the health benefits of this activity. The results indicate that a significant majority of respondents believe that long-distance running is healthy. This opinion was more frequently expressed by individuals with static jobs (44.29%). Similar opinions regarding the positive impact of long-distance running on health were expressed by over three-quarters of runners from all over Poland—out of 869 respondents, according to reports by Nowak and Supiński. The authors noted that as the length of training experience increases (over 10 years), so do health concerns among respondents [22].

Participation in half-marathons and marathons involves extreme effort, causing a 10-15-fold increase in energy and oxygen demand for working muscles. The efficiency and adaptation of the cardiovascular, respiratory, hormonal, and nervous systems determine the onset of central or muscle fatigue symptoms. In the presented study, most respondents reported training experience of 1 to 3 years, with a slightly smaller percentage having 3 to 10 years of experience, indicating that the analyzed group consisted of experienced amateur runners. This is confirmed by their practice of warming up before planned effort, stretching muscles, and performing strength exercises. The majority of respondents trained 1-4 times per week, dedicating about 1 hour per session. The distance covered varied by gender—most women covered 30 to 50 km, while men covered 50 to 100 km. It is difficult to compare the training intensity of the respondents to elite long-distance runners, but to illustrate the scale of differences, some values are worth mentioning. The average weekly distance for women is 166±11 km, with 12.2±0.4 training sessions per week, and an average session duration of 113±25 minutes; for men, the respective values are 206±26 km, 13±0.7 sessions, and 125±11 minutes [23].

Conclusions

The results of the study indicate that long-distance running is an important physical activity among the study participants. There are many health benefits of practising this physical activity. This is confirmed by the opinions of those taking part in the study. The most important motivator for practising long-distance running for respondents is the desire for better sporting

performance. In second place is the need to release from stress. An important, although less dominant, motivation is to improve the overall quality of life. The least influential motivation is health reasons. Most respondents believe that long-distance running is healthy, improves fitness physical condition and have a beneficial effect on the cardiorespiratory and immune systems. Running is also seen as an effective way to reduce stress and improve sleep quality. A small number of respondents believe that long-distance running is not healthy, as it puts significant strain on the heart and musculoskeletal system and can be a source of frequent pain. Warming up before a planned effort is a common practice among runners. Strength and muscle stretching exercises are also an important part of preparation. Past injuries do not diminish the satisfaction of long-distance running. Despite having experienced injuries in the past, a significant proportion of respondents still believe that endurance running long-distance endurance running is healthy.

Organisers of running events and coaches should focus on supporting the runners' sporting ambitions by offering training programmes aimed at improving athletic performance. It is worth highlighting the health benefits of running, such as improved fitness and cardiorespiratory system, to attract more people to the sport. Given that injuries do not detract from running satisfaction but are common, organisers and coaches should place more emphasis on education about injury prevention and correct running technique. Conducting more detailed research into runners' motivations could help to better understand their needs and adapt training plans. Further research into the impact of injury on long-term commitment to running could provide valuable information on strategies to keep runners active despite injury. Developing and promoting preventative programmes that can reduce the risk of injury could contribute to even greater enjoyment of long-distance running.

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