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HEALTH ISSUES OF THE ROMANIAN MASTERS ATHLETES, THE CORRELATION BETWEEN THE MEDICAL CONDITIONS AND THE RECOVERIES

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Abstract: *The purpose of the present study is to investigate the health issues of Romanian master athletes who practice endurance running and the methods for recovering after their workout. The research method was the investigation. The tool which is used is a questionnaire developed for the present research. Of the 111 respondents, 61.8% are men and 38.2% are women. The results collected show that 46.8% of the athletes came across health issues and that there is a certain correlation between the medical conditions suffered by master athletes and the recovery methods (p <1%). Conclusions: we consider that the attention paid to the "training" of the athletes regarding the crucial role of adequate recovery after the workout reduces the risk of injury. In the first weeks after a serious injury, in order to avoid any recurrence, a full recovery and a progressive increase of the workout level are necessary.*

Key words: *health issues, recovery, master athlete, endurance running*

1. Introduction

Running has become very popular among participants in recreational sports activities. This sport promotes health [7]. Its success is due to its simplicity and its accessibility to most people, regardless of age [2].

Doyenart (2020) and his team state in their article that there is a certain relationship between the mental health and the physical activity of amateur runners. The authors have demonstrated that running different distances can work upon the level of anxiety, stress and mood swings. They studied the psycho-physiological changes of the master athletes after completing the half marathon and detected an increase of their feeling of happiness (25%) and self-esteem (40%). The study consisted in physiological analyzes (heart rate, energy expenditure) and assessments of mental health (stress, anxiety, self-esteem and

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happiness). Doyenart concludes that a half marathon workout is capable of increasing happiness and self-esteem [4].

However, endurance running can also have side effects on health issues. For amateur runners who are mostly middle-aged, prolonged intense workouts can endanger health. Endurance running is harmful to the heart which is overworked [10]. There are metabolic complications that can endanger the health of the runner, such as: ischemic heart disease, severe disorders related to heat or cold, severe fluids and electrolytes abnormalities, arrhythmia, stroke [8].

Health issues or injuries can occur regardless of the age of a runner. Sometimes it is a challenge to find out the cause of injuries, why they occurred, while solving them involves a series of tests (X-rays), costs in time and money [12].

Aerobic training can damage the muscular system and tissues, because running is a cyclical activity that has a large number of impacts with the ground and can lead to excessive injury to the lower limbs. The incidence of injuries increases with distance. The most common body parts prone to injury are the lower limbs, the knee being the most affected. Women appear to have a lower risk of injury than men [2]. Muscles and cognitive tissues suffer because running is a weight-bearing activity that involves repeated stretch-shortening cycles. Shorter runs are often performed at a faster pace, increasing vertical and horizontal forces and leading to injuries due to overload.

Injuries

Due to the impact of thousands of steps with the ground, pressing thus the lower body parts, running has a reputation for causing more injuries than any other sports. The most common health issues that occur in master athletes are: plantar fasciitis, ankle sprain, pain in the calf and the Achilles tendon, medial tibial stress syndrome, runner's knee, meniscus, popliteal and piriformis muscle injuries, back pain etc [6].

Avoiding injuries

Nothing is more frustrating for a runner than being prevented from running due to an injury [6]. Most injuries are caused by improper training, poor technique or overload. The risk of injury can be significantly reduced if the athlete takes care of his body [11].

The recovery or the regeneration of the body is a multidimensional process and must take into account the following factors: age of the athlete, sex, environmental factors, freedom of movement, type of muscle fiber, psychological factors, treatment of acute local trauma and of overtraining, vitamins and minerals intake [1].

2. Materials and Methods

2.1. Objectives and hypotheses

The goal: researching the health issues and the recovery of the endurance athletes.

Hypothesis: We believe that, for a high percentage of runners, endurance training leads to health issues, especially to the lower limbs, and that recovery is the key to the success of a healthy athlete.

2.2. Instruments

Questionnaire prepared by the author of the article with the following dimensions*:*

- Socio-demographic data (gender, age, education, occupation, residence, civil

status);
- Data on running experience;
- Training history;
- Data on personal results;
- Data on health issues;
- Data on recovery methods;
- Perception of running changes (improvement or not of aspects related to sleep quality, body weight, immunity and nutrition).

2.3. Participants

The present study involved 111 masters athletes, of whom 38.2% were women and 61.8% were men. The participants were informed about the significance of the study and were asked to provide the required information. There were no criteria for excluding questionnaires, all of which were accepted.

2.4. Procedure

2.4.1. Sampling method

Due to the COVID-19 pandemic, 2020 was a non-competitive year, so any attempt to select the random sample was futile. The authors appealed to the organizers of a half marathon in 2019 and obtained a list of masters participants. From the total of 134 master participants, 111 answered the questions in the questionnaire, that is a rate of 83%. We can say that the method is the venue based sampling, even if the data was collected long after the half marathon. The venue based sampling is non-random and thus we cannot extrapolate the sample data on the entire population. The duration of completing the questionnaire was approximately 15 minutes, for 15 questions. The answers were received both digitally and on paper.

2. 4.2. Statistical analysis

All data were collected in SPSS - IBM Statistical Package for the Social Sciences.

3. **Results**

The demographic profile of the sample

Of the 111 respondents, 62.2% are men and 37.8% are women. The distribution by age categories is as follows: 34.5% between 35 and 39 years, 16.4% between 40 and 44 years, 18.2% between 45 and 49 years, 13.6% between 50 and 54 years, 5.5% between 55 and 59 years and 11.8% over 60 years. The sex/age contingency table shows equal distributions for the second, third and fifth age ranges and an overrepresentation of men in the first, fourth and last age ranges.

Table 1

The distribution of the athletes according to age categories

		Age (years)						TOTAL (%)
		35–39	40–44	45–49	50–54	55–59	60 or over	
Sex	Masculine (%)	65.8	50.0	50.0	73.3	50.0	76.9	61.8
	Feminine (%)	34.2	50.0	50.0	26.7	50.0	23.1	38.2

The distribution according to studies is disproportionate, biased towards those having a higher education the women are slightly overrepresented in the sample.

Table 2

The distribution according to studies

		Studies	
		Intermediate	Advanced
Sex	Masculine	13.4%	86.6%
	Feminine	11.9%	88.1%
TOTAL		12.8%	87.2%

The distribution according to residence is disproportioned, biased towards the urban residence, men are slightly overrepresented in the sample.

Table 3

The distribution according to residence

		Residence	
		Urban	Rural
Sex	Masculine	89.6%	10.4%
	Feminine	85.7%	14.3%
TOTAL		88.1%	11.9%

The respondents have practised running, on average, for 13 years, the standard deviation being of 12 years. For each age category, the average and standard deviation of the period they practised running appears in the following table.

Table 4

The masters athletes' running experience

Age (years)	Mean	Std. Deviation
35-39	7.18	4.465
40-44	8.28	7.226
45-49	16.05	12.927
50-54	13.27	8.181
55-59	35.17	11.822
60 or over	23.62	18.505

Illnesses

53.2% of the respondents stated that they had no medical condition, 21.6% stated that they suffered from minor injuries of the lower limbs and back (anterior knee pain, muscle pain, back pain, joint pain, tibial stress), and 25.2% stated that they suffered from serious injuries (muscle tears, ligament tears, sprains, dislocations, bursitis, iliotibial tendonitis, tibial periostitis, Achilles tendinopathy). We defined as minor injuries, the disorders of the musculoskeletal system. Men are overrepresented in the categories of minor injuries and serious injuries, while women are overrepresented in the category of no medical conditions:

Injuries according to age category Table 5

		Sex		Total
		Masculine	Feminine	
Types of medical condition	None	34	25	59
		49.3%	59.5%	53.2%
	Minor injuries	16	8	24
		23.2%	19.0%	21.6%
	Severe injuries	19	9	28
		27.5%	21.4%	25.2%

The distribution according to age shows that, for below average ages, the distribution according to injuries is close to the average, but for the 50-54 and 55-59 age ranges, the minor injuries become overrepresented, and for the category 60 years or over, we can notice how minor injuries (underrepresented) become severe (overrepresented).

The distribution of injuries according to age categories Table 6

		Age (years)						TOTAL
		35–39	40–44	45–49	50–54	55–59	60 or over	
Types of medical condition	None	20	10	13	7	3	5	58
	(%)	52.6	55.6	65.0	46.7	50.0	38.5	52.7
	Mild Injuries (%)	8	5	2	6	2	1	24
		21.1	27.8	10.0	40.0	33.3	7.7	21.8
	Severe Injuries (%)	10	3	5	2	1	7	28
		26.3	16.7	25.0	13.3	16.7	53.8	25.5

Recoveries

According to their efficiency, the recovery methods after sports competitions were divided into five categories (and of course, the most convenient ways for the masters athletes, who perform other activities, not just sports): sports pharmacology, passive rest, hydration, active rest and massage. The extent to which masters athletes use these recovery methods is as follows:

The degree of use of the recovery methods Table 7

		Absolute frequency	Relative frequency
Recovery method	Sports pharmacology	20	18.0
	Passive rest	20	18.0
	Hydration	6	5.4
	Active rest	44	39.6
	Massage	21	18.9

The gender distribution shows an overrepresentation of women for sports pharmacology and massage, while men are overrepresented in passive rest, hydration (8.7% to 0%) and active rest.

Table 8

The distribution of the sports recovery methods according to gender

		Sex		Total
		Masculine	Feminine	
Recovery method	Sports pharmacology	12	8	20
		17.4%	19.0%	18.0%
	Passive rest	14	6	20
		20.3%	14.3%	18.0%
	Hydration	6	0	6
		8.7%	0.0%	5.4%
	Active rest	28	16	44
		40.6%	38.1%	39.6%
	Massage	9	12	21
		13.0%	28.6%	18.9%

The distribution according to age is shown in the following table.

The distribution of recovery methods according to age Table 9

		Age (years)						Total
		35-39	40-44	45-49	50-54	55-59	60 or over	
Recovery method	Sports pharmacology	8	3	5	2	1	0	19
		21.1%	16.7%	25.0%	13.3%	16.7%	0.0%	17.3%
	Passive rest	9	2	2	3	2	2	20
		23.7%	11.1%	10.0%	20.0%	33.3%	15.4%	18.2%
	Hydration	2	2	0	0	0	2	6
		5.3%	11.1%	0.0%	0.0%	0.0%	15.4%	5.5%
	Active rest	12	10	7	6	2	7	44
		31.6%	55.6%	35.0%	40.0%	33.3%	53.8%	40.0%
	Massage	7	1	6	4	1	2	21
		18.4%	5.6%	30.0%	26.7%	16.7%	15.4%	19.1%

The correlation between the conditions suffered and the methods of recovery

The purpose of the present article is to demonstrate the correlation between the conditions suffered by the master athletes and the recovery methods. The injuries were marked with 1 None, 2 Minor Injuries and 3 Serious Injuries and the recovery methods were marked from 1 Sports Pharmacology to 5 Massage, in order of effectiveness. Thus, the researchers expect a positive correlation coefficient. The researchers cannot establish the causal relationship, because the arguments can go in both directions:

- The master athletes began to have minor and then serious injuries, probably due to the fact that they continued training while suffering from an injury and moved from sports pharmacology and passive rest to active rest and massage.
- To prevent serious injuries, the master athletes choose as methods of recovery sports pharmacology and passive rest.

In the contingency table below, there is a decreasing distribution of those with no injuries as the efficiency of the recovery method decreases, while for those with minor and severe injuries we can notice an increase in percentages.

Table 10

The relationship between the recovery methods and the type of medical conditions

		Types of medical conditions		
		None	Mild injuries	Severe injuries
Recovery method	Sports pharmacology	80.0%	10.0%	10.0%
	Passive rest	65.0%	10.0%	25.0%
	Hydration	50.0%	16.7%	33.3%
	Active rest	43.2%	34.1%	22.7%
	Massage	38.1%	19.0%	42.9%
Total		53.2%	21.6%	25.2%

Because the data are arranged ordinarily and cannot assume a normal distribution of responses, the researchers chose to use the Kendall and Spearman correlation

coefficients. The correlation coefficients are not high, but they are significant (p <1%). By its construction, the Kendall correlation coefficient is always lower than the Spearman correlation coefficient, but it is more useful for small samples like the one hereby analyzed.

Table 11

Kendall and Spearman Correlation coefficients table

Kendall's tau_b	Correlation Coefficient	.248**
	Sig. (2-tailed)	.003
	N	111
Spearman's rho	Correlation Coefficient	.284**
	Sig. (2-tailed)	.003
	N	111

4. Debates

The present study describes the health issues that occur for people over 35, when practicing endurance running. The main health issue were the injuries. Our result is in line with the literature, which shows that injuries due to overload are the most common health issues while practising endurance sports [5].

The study confirms Boulosa's results, namely that most injuries appear in the lower limbs, and men are injured more than women.

After a competition, it is very important for the athlete to relax, to restore his body's energy reserves and to give himself time to recover [11].

We classified the health issues, resulting from the questionnaires into minor and serious injuries. The category of minor injuries includes the following disorders of the musculoskeletal system: anterior knee pain, muscle pain, back pain, joint pain, and tibial stress syndrome. In the category of serious injuries, we included: muscle tears, ligament tears, sprains, dislocations, bursitis, iliotibial tendonitis, tibial periostitis, Achilles tendinopathy.

The results show that athletes are concerned with the role of recovery (p <1%). We classified the most accessible recovery methods for the athletes, as follows: sports pharmacology, active rest (moderate aerobic training and stretching), rehydration, passive rest (sleep), and massage. For a proper functioning of the body and in order to be able to continue this hobby for as long as possible, there must be a balance between training and recovery.

5. Final conclusions

By analyzing the present questionnaires, we cannot yet draw a conclusion on the quality of the athletes' training programs, as the response of the participants in the study on their health issues is brief. We also cannot know whether the recovery of athletes is done correctly or empirically, as they only generally express their training and recovery program.

There is insufficient evidence of the exact time required to restore homeostasis in people over 50. It is known that, with age, the body's recovery process from endurance training takes longer and is less effective and it also depends on the level of fatigue, the

duration of the training and the age of the athlete [3].

In the present study, based on scientific literature, we displayed an overview of certain negative aspects of this hobby. The results we collected showed that the experimental hypothesis was confirmed in practice, validating the initial assumptions from which the research started. There are several intrinsic (gender, biomechanics, anatomy) and extrinsic factors (experience, running kilometres, training habits), which can contribute to the risk of injury, and the master athletes are mostly concerned with the recovery.

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