

**BODY COMPOSITION, EATING  
HABITS AND RISK FACTORS  
FOR THE DEVELOPMENT OF  
EATING DISORDERS IN FEMALE  
ELITE ATHLETES**

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**ABSTRACT**

*The number of women who actively participate in sports has drastically increased in the last few decades, which is a trend followed by many health benefits and serious harmful health side effects as well. The Female Athlete Triad stands out among these as a condition which includes eating disorders, menstrual disorders and osteoporosis. Eating disorders are the first link to which all other disorders are later attached, while the risk for their development remains undetected despite the specificities of certain sports. They often develop out of eating restrictions (diets) or out of an unhealthy eating habit. The aims of this paper were to detect risks for the development of eating disorders by 1) determining body composition parameters and harmful eating habits and 2) identifying risk factors suggested by American Academy of Family Physicians.*

*The sample of examinees was comprised of elite female athletes (N=111) divided into three groups (sports that use a ball, dance and athletics), each with different risks for the development of eating disorders. The control group (N=27) consisted of non-athlete female students. They had their body composition and BMI determined and they answered a questionnaire which estimated risks for the development of eating disorders in primary health care. Based on the answers to screening questions and eating habits, the results showed significantly higher risks for the development of eating disorders in the athletes' group, compared to the control group. Low BMI of less than 18.5, as a direct criterion for energy deficiency, was also more present ( $p < 0,05$ ) in the athletes' group. Therefore, based on body index values and key screening questions, we conclude that active participation in sports carries a higher risk for the development of eating disorders.*

**Key words:** *Female Athlete Triad, eating disorders in sports, body composition.*

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## INTRODUCTION

The number of women who actively participate in sports has drastically increased in the last few decades. This trend has caused many physical and mental benefits to female athletes and has generally affected health improvement among physically active women (Mountjoy, Sundgot-Borgen, Burke, Carter, Constantini and ass., 2014). However, clinical experience and scientific studies clearly indicate that there are some side effects to doing sports which are harmful for female athletes (Mountjoy, Sundgot-Borgen, Burke, Ackerman, Blauwet, Constantini and ass., 2018). The Female Athlete Triad is primarily taken into account here, which is a direct consequence of inadequate and unbalanced diet or of energy (calory) deficiency compared to energy expenditure during physical activity (Otis, Drinkwater, Johnson, Loucks, Wilmore and ass., 1997). The Triad is officially defined as a combination of energy deficiency caused by eating disorders eventually leading to menstrual disorders and finally to low bone mineral density or osteoporosis (Drinkwater, Loucks, Sherman, Sundgot-Borgen and Thompson, 2005). Eating disorders in sports represent a continuous model of disorders. They move along a wide spectrum, ranging from abnormal and often very dangerous eating habits, whose aim is body weight reduction, to serious clinical mental conditions which can be associated with other psychiatric pathologies (Joy, Kussman and Nattiv, 2016). According to Publication Manual of the American Psychological Association DSM - V, 2013, the continuum of eating disorders in sports include clinical disorders; anorexia nervosa, bulimia nervosa and unspecified eating disorders. Besides the mentioned Triad symptoms, female athletes with this condition may not only develop musculoskeletal, cardiovascular, renal, metabolic, neuropsychiatric symptoms but face the fatal outcome as well (Nativ, Loucks, Manore, Sanborn, Sundgot-Borgen and Warren, 2007). The most significant factors are: 1. female athletes' effort to meet specific criteria of body weight or shape which a particular sport requires, 2. visible benefit in physical ability resulting from reduced body weight or shape, 3. increased sensitivity to socio-cultural demands/pressures (media, audience) to accomplish a specific body composition. These factors can lead to a completely wrong perception of one's body, dangerous changes in eating habits, irrational restrictions in food (*diets*), which eventually lead to clinical eating disorders. Similarly, female athletes who do endurance sports with significant energy expenditure during intense trainings are often not aware of their calorie needs. The resulting energy deficiency initiates a cascade of Triad symptoms (Nativ and ass. A. 2007; Mountjoy, 2015). Specific risks for the development of the Triad with all or some of its symptoms are present in biotypes of female athletes who do endurance sports (marathon, cycling, swimming), aesthetic sports (figure skating, gymnastics, dance, ballet), weight-based sports (martial arts) as well as sports which favour clothes that reveal much of the female body such as valleyball or basketball (Dosil, 2008). A lot of diagnostic procedures have been developed to confirm eating disorders, but the base are questionnaires with targeted questions. Majority of the questionnaires have a lot of questions and are time consuming, which is why many female athletes often give up on the procedure. Thus, American Academy of Family Physicians has suggested targeted questions for early detection of eating disorders in primary health care.

Suggested screening methods are convenient for usage in primary health care or even by a coach or club's doctor/nutritionist. In accordance with answers to given questions, a female athlete can be treated as a potential risk bearer and subsequently referred to a detailed examination (Pritts, 2003). One such method was used in our research. Risk for the development of eating disorders can be traced on the basis of body mass index/BMI value if it is below the minimum reference values of 18.5 or on the basis of presence of any unhealthy eating habits which are often an entry point for a clinical disorder (Thorsveit and Sungot-Borgen, 2005). The purpose of this research was to determine risk factors for the development of eating disorders or present energy deficiency, which are entry points for the Female Athlete Triad appearance. Some of the questions/parameters used in this research are diagnostic criteria for clinical eating disorders as well as for risk assessment for the development of any such disorders.

The research objectives were to detect risks for the development of eating disorders by 1) determining body composition parameters, 2) determining harmful eating habits, 3) identifying risk factors suggested by American Academy of Family Physicians.

## **METHODS**

The examinees (n=117) were divided into two groups, experimental or female athlete group (A) and control group (C). The experimental group (n=84) was comprised of three subgroups of elite female athletes who do different sports: 34 female athletes who do sports that use a ball, current world champions (basketball and handball), 27 female athletes who do athletics, mostly state representatives (running in the long and middle distances), 23 female athletes who engage in sports dance, all with international experience. The types of sports were chosen according to different sport-related specific risks for the development of eating disorders. Sports that use a ball bear a risk because of the clothes that reveal much of the female body, dance belongs to aesthetic sports which are appearance-oriented and athletics belongs to endurance sports with potential energy deficiency. At the time all female athletes were finishing their competition season, which provided cumulative effect of physical activity on their bodies. The control group (n=27) was comprised of female students at the Faculty of Medicine in Banjaluka, of similar age to female athletes in the experimental group, who do not participate in sports actively. All the examinees and their coaches were given written information on the research objectives and procedures and the examinees signed written consent for participation before entering the research. The research participants were a part of a wider research on the Female Athlete Triad appearance. The first phase of the research consisted of introducing the examinees to the research purpose and answering a questionnaire comprised of a section on

general information, a section on general health status and a section aimed at detecting risks for the development of eating disorders. The questions represented a combination of real diagnostic criteria and questions suggested for primary health care of female athletes. A positive answer to any of these questions indicated risks for the development of eating disorders and required further evaluation using a precise method. Body composition (fat percentage, BMI) was determined by body composition analyser (Gaia Jawon 357, South Korea) using bioimpedance method. The results were statistically analysed using SPSS 20 program expressing standard statistical variables.

## RESULTS

The descriptive statistics parameters of the groups, age, sports experience, weekly physical load and body mass index are given in Table 1.

Table 1. Descriptive characteristics of the examinees groups (age, sport experience, weekly physical load, body mass index and body fat percentage) given as mean  $\pm$ SD.

Group	Sports that use a ball N=34	Dance N=23	Athletics N=27	Control group N=27
Age (years)	19,64 $\pm$ 2,63	17,69 $\pm$ 2,97	17,41 $\pm$ 4,24	20,88 $\pm$ 0,42
Sport experience (years)	9,5 $\pm$ 2,21 <sup>a</sup>	6,52 $\pm$ 1,81	5,18 $\pm$ 2,4	0
Weekly physical load (hours per week)	12,20 $\pm$ 2,51 <sup>b</sup>	7,32 $\pm$ 3,77	13,98 $\pm$ 5,19 <sup>b</sup>	0
Body mass index (BMI) (kg/m <sup>2</sup> )	22,26 $\pm$ 1,82 <sup>c</sup>	19,53 $\pm$ 1,83	19,10 $\pm$ 1,72	21,13 $\pm$ 2,70
Body fat percentage (%)	17,44 $\pm$ 6,01 <sup>d</sup>	14,44 $\pm$ 5,45	8,60 $\pm$ 4,00 <sup>e</sup>	20,94 $\pm$ 6,31

<sup>a</sup> (p<0,01) compared to dance and athletics  
<sup>b</sup> (p<0,01) compared to dance  
<sup>c</sup> (p<0,05) compared to dance and athletics  
<sup>d</sup> (p<0,05) compared to dance  
<sup>e</sup> (p<0,01) compared to dance and sports that use a ball

Significantly most experienced female athletes are from the group of sports that use a ball, who are on average the oldest female athletes as well. The overall female athletes sample shows long

enough sport careers which can reveal both positive and negative effects of participating in sports. The degree of weekly physical load, unless it is followed by adequate calorie intake, represents one of the factors for the development of so called “low energy availability” or low energy supplies crucial for the development of the Triad. The group of female athletes who do athletics and the group of female athletes who participate in sports that use a ball are weekly significantly more loaded, at the level of  $p < 0,01$ , than the group of female athletes who engage in dance, while the difference between the first two is almost insignificant.

The value of the body mass index, widespread in describing body composition, is lately losing importance in application in sports. Nevertheless, it is taken as a risk factor since it is marked as one of criteria for the risk for the development of eating disorders and closely related to menstrual dysfunctions. The highest BMI is among the female athletes who participate in sports that use a ball while in the groups of female athletes who engage in dance and do athletics average BMI values are near  $18.5 \text{ kg/m}^2$  which is considered a parameter of energy deficiency. The percentage of body fat is the best indicator of body composition. The lowest percentage of body fat was detected among the female athletes who do athletics and the highest among the control group examinees. Answers to the questions used in the Questionnaire gave us parameters which refer to the detection of risk factors for the development of eating disorders. Table 2 presents results for the overall sample as well as comparison between the female athletes and the female non-athletes, which shows the role of participating in sports as a risk factor for the development of eating disorders.

Table 2. Risk factors for the development of eating disorders in the overall sample and in the athletes compared to the control group, given as number (n) and the percentage of examinees (%) in a group.

Group	Overall sample	Athletes (S)	Control
	N=111 n (%)	N=84 n (%)	N=27 n (%)
Are you satisfied with your weight?	Yes 72 (64,9)	Yes 49 (58,3)	Yes 23 (85,2)
	No 39 (35,1)	No 35 (41,7) <sup>a</sup>	No 4 (14,8)
Are you satisfied with your looks?	Yes 86 (77,5)	Yes 64 (76,2)	Yes 22 (81,5)
	No 25 (22,5)	No 20 (23,8) <sup>b</sup>	No 5 (18,5)
Objections of environment to your looks and weight?	Yes 29 (26,4)	Yes 23 (27,4) <sup>c</sup>	Yes 6 (22,2)
	No 82 (73,6)	No 61 (72,6)	No 20 (74,1)
Are you on a ‘diet’ now?	Yes 5 (4,5)	Yes 4 (4,8)	Yes 1 (3,7)

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	No 106 (95,5)	No 80 (95,2)	No 26 (96,3)
Have you ever been on a 'diet' during your career?	Yes 11 (9,9)	Yes 8 (9,5)	Yes 3 (11,1)
	No 100 (90,1)	No 76 (90,5)	No 24 (88,9)
Do you use training regime for weight reduction?	Yes 11(9,9)	Yes 8 (9,5)	Yes 3 (11,1)
	No 100 (90,1)	No 76 (90,5)	No 24 (88,9)
Do you vomit meals in order to lose weight?	Yes 1(0,9)	Yes 1 (1,2)	Yes 0 (0)
	No 110 (99,0)	No 83 (98,8)	No 27 (100)
Do you use 'weight loss products' (diuretics, laxatives, appetite suppressants)?	Yes 4 (3,6)	Yes 4 (4,8) <sup>d</sup>	Yes 0 (0)
	No 107 (96,4)	No 80 (95,2)	No 27 (100)
Do you avoid any foods/forbidden foods?	Yes 29 (26,1)	Yes 25 (29,8) <sup>e</sup>	Yes 4 (14,8)
	No 82 (73,9)	No 59 (70,2)	No 23 (85,2)
<sup>a</sup> (p<0,01) compared to (C)			
<sup>b</sup> (p<0,05) compared to (C)			
<sup>c</sup> (p<0,01) compared to (C)			
<sup>d</sup> (p<0,01) compared to (C)			
<sup>e</sup> (p<0,01) compared to (C)			

Questions about examinees' attitude towards weight and appearance can reveal risks for the development of harmful and irregular eating habits, which bear potential for transformation into symptoms of real criteria for eating disorder diagnosis. Answering the question "*Are you satisfied with your weight?*" 41,7 % of the female athletes said *no*, which indicates the prevalence of this attitude among young female athletes. The difference in answer is statistically significant compared to the control group, which shows the female athletes orientation towards body weight values. Answering the question "*Are you satisfied with your looks?*" 23,8 % of the female athletes said *no*, which is statistically significant when compared to the non-athletes. Answering the question "*Does your environment (coaches, parents, teammates, friends) have objections to your looks or weight?*" 27,4 % of the female athletes said *yes*. Almost one out of three female athletes from our sample is under the pressure because of the looks, body weight or composition. Diets i.e. restrictive diets with the aim of weight reduction are usual means to control or achieve desired body weight. Inadequate diet leads both to absence of desired results, which opens a vicious cycle of pathological eating habits, and to fatal effects on physical ability and thus sport results. Answering the question "*Are you on a diet trying to reduce body weight?*" only 4,5% of the examinees in the overall sample said *yes*, which is encouraging. Due to the small number of the examinees who answered positively, there is no statistical significance in the difference between the athlete groups and the non-athlete groups nor among the groups of female athletes. One female athlete, a dancer, answered positively to the question on vomiting meals as

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a means to control body weight. Despite the fact that she alone was not enough for statistical significance, she deserved attention since vomiting meals is a diagnostic criterion for bulimia nervosa. Weight loss products as a means to control body weight were significantly more used by the female athletes; the same is true for avoidance of certain foods in diets.

Table 3. Risk factors for the development of eating disorders in the athlete groups compared to the control group given as number (n) and the percentage of examinees (%) in a group.

Group	Sports that use a ball (N=34)			
	n (%)	Dance (N=23) n (%)	Athletics (N=27) n (%)	Control (N=27) n (%)
Are you satisfied with your weight?	Yes 18 (52,9)	Yes 13 (56,5)	Yes 18 (66,7)	Yes 23 (85,2)
	No 16 (47,1)	No 10 (43,5)	No 9 (33,3)	No 4 (14,8)
Are you satisfied with your looks?	Yes 26 (76,5)	Yes 17 (73,9)	Yes 21 (77,8)	Yes 22 (81,5)
	No 8 (23,5)	No 6 (26,1)	No 6 (22,2)	No 5 (18,5)
Objections of environment to your looks and weight?	Yes 12 (35,3)	Yes 4 (17,4)	Yes 7 (25,9)	Yes 6 (22,2)
	No 22 (64,7)	No 19 (82,6)	No 20 (74,1)	No 20 (74,1)
Are you on a 'diet' now?	Yes 1 (2,9)	Yes 2 (8,7)	Yes 1 (3,7)	Yes 1 (3,7)
	No 33(97,1)	No 21 (91,3)	No 26 (96,3)	No 26 (96,3)
Have you ever been on a 'diet' during your career?	Yes 2 (5,9)	Yes 4 (17,4)	Yes 2 (7,4)	Yes 3 (11,1)
	No 32 (94,1)	No 19 (82,6)	No 25 (92,6)	No 24 (88,9)
Do you use training regime for weight reduction?	Yes 4 (11,8)	Yes 3 (13,0)	Yes 1 (3,7)	Yes 3 (11,1)
	No 30 (88,2)	No 20 (87,0)	No 26 (96,3)	No 24 (88,9)
Do you vomit meals in order to lose weight?	Yes 0 (0)	Yes 1(4,3)	Yes 0 (0)	Yes 0 (0)
	No 34 (100)	No 22 (95,7)	No 27 (100)	No 27 (100)
Do you use 'weight loss products' (diuretics, laxatives, appetite suppressants)?	Yes 0 (0)	Yes 0 (0)	Yes 4 (14,8) <sup>a</sup>	Yes 0 (0)
	No 34 (100)	No 23 (100)	No 23 (85,2)	No 27 (100)
Do you avoid any foods/forbidden foods?	Yes 4 (11,8)	Yes 12 (52,2)	Yes 9 (33,3)	Yes 4 (11,8)
	No 30 (88,2)	No 11 (47,8)	No 18 (66,7)	No 23 (85,2)

<sup>a</sup> (p<0,05) compared to the group of dance and sports that use a ball.

Table 3 presents answers to questions divided into the groups of female athletes. This way we wanted to determine the existence of sport specific risks for the development of eating disorders. Result analysis shows that the determined risk is equally distributed in the groups. An exception

is the usage of weight loss products, which is present only in the group of female athletes who do athletics. They are also the athletes with the lowest BMI and the lowest body fat percentage. BMI value below 18.5 kg/m<sup>2</sup> is taken as malnutrition border and a risk for the development of eating disorders. Table 4 shows that the female athletes are under a significantly higher risk than the female non-athletes while the risk among the athlete groups remains equal.

Table 4. The number of examinees in groups with BMI<18,5 kg/m<sup>2</sup>

<b>Group</b>	<b>N</b>	<b>n (%)</b>
<b>Overall sample</b>	111	21 (18,9)
<b>Athletes (A)</b>	84	16 (19,04) <sup>a</sup>
<b>Control group (C)</b>	27	5 (18,51)
<b>Sports that use a ball (S<sub>b</sub>)</b>	34	0
<b>Dance (D)</b>	23	7 (30,43)
<b>Athletics (A)</b>	27	9 (33,33)
<b>Control group (C)</b>	27	5 (18,51)

<sup>a</sup> (p<0,05) compared to the control

## DISCUSSION

The nature and extent of problems related to nutrition have received significant attention in the last two decades. (Sundgot-Borgen, Bratland-Sanda, Engen, Pettersen, Friborg and ass. 2018). Death and serious health consequences among several elite female athletes (Christy Heinrich in 1994, for example) are part of strong claims that female athletes are under an especially high risk for the development of these disorders. Terms ‘normal eating’, ‘disordered eating’, ‘pathological eating habits’ are used to describe the continuum of individual appearances and habits in eating to the most serious clinical appearances (anorexia nervosa and bulimia nervosa). Eating disorders often have insidious and inconspicuous beginning. They start with moderate efforts to correct body weight or shape, usually through a harmless diet, and end up with eating and body weight preoccupation. Symptoms become evident not until significant body weight loss (Mountjoy, 2015). Symptoms of these disorders are usually kept as a secret or overlooked, which is why it is difficult to determine the exact percentage of athletes with eating disorders. Numerous studies have documented higher frequency of eating disorders among athletes compared to non-athletes, as well as among female athletes compared to male athletes (Rome, 2003). According to DSM-V criterion, anorexia and bulimia frequency with general population ranges from 1% to 3% while eating disorder frequency among female athlete population ranges from 15% to 62% depending on a sport (Sundgot-Borgen and Torstveit, 2004). Recent data show frequency of energy

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deficiency or of eating disorders, ranging from 7.1% to unbelievable 89.2% depending on a sport (Williams, Statuta and Austin, 2017). Diagnostic screening tests, suggested to be used in primary health care, are of great value and we used them as well. Our results were compared to a similar bigger study whose aim was to determine the prevalence of eating disorders among student athletes (Johnsom, Powers, and Dick, 1999). Six episodes of vomiting meals or diuretics and laxatives usage were taken as risk factors, similar to the questions in our research. Based on our results, we note that one female athlete or 1,2% answered positively to the question. This criterion is one of the most important criteria when diagnosing bulimia purging type in DSM-V. The second question which is related to pathological eating habits and which is a direct indicator for eating disorders refers to diuretics, laxatives and appetite suppressants usage. 3,8% of the female athletes answered it positively. It is significantly less than in a study which included 182 female athletes where it was concluded that 32% of female athletes vomited their meals, used diuretics or laxatives every day for at least a month in their careers (Rosen and Hough, 1988). Negative attitude towards looks and weight is not a direct indicator, but it is qualified as a risk factor for the development of eating disorders (Pritts, 2003). 22,5% of overall examinees sample in our study answered negatively to the question whether they were satisfied with their looks or not. This attitude shows great percentage of young women who are dissatisfied with their bodies. Considering variance between the groups we have discovered that there is statistically significant difference between the group of female athletes and the group of female non-athletes. Even though it is significant, this number is much smaller than in a study of Arthur-Cameselle which showed that up to 88% of female athletes and 82% of female non-athletes were dissatisfied with their looks (Arthur-Cameselle, Sossin and Quatromoni, 2017). In an older study conducted on the sample of 955 female swimmers, Dammer and associates discovered that 80,5% of examinees wanted to lose weight in order to look better, 58,5% wanted to lose weight in order to achieve better sport results and 21,9% wanted to lose weight because of general health (Dummer, Rosen, Heusner, 1988 ). In one study 13,7% of female athletes and 11,8% of female non-athletes were dissatisfied with their looks and continuously tried to lose weight (Sundgot-Borgen, 1994). Several studies show high percentage of coaches who participate in looks or weight estimation and correction of female athletes in a wrong way (Sherman, Thompson R, 2005; Plateau, Arcelus McDermott, Meyer, 2015). Analysing our results we note that 27,4% of the female athletes are under the pressure of environment because of their looks or body weight. There is no statistically significant difference within the sport groups, but we note that the group of sports that use a ball is most threatened. 35% of them said that their coaches had some objections related to their looks and they are also the group with the highest body weight and BMI values. A similar study, conducted by Rosen and associates, showed that two thirds of female athletes stated that their coaches had negative opinion about their looks and thought them to be overweight (Rosen and ass., 1988.). We took BMI lower than 18.5 as an indirect method for energy balance disorder. It also served as an additional criterion within risks for disordered eating. Taking low BMI values as a risk factor for the development of eating disorders, we note that 19,04% of the female athletes have disordered energy balance or are under the risk

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for the development of eating disorders. The number is equally distributed among the athlete groups. Despite the fact that many athletes show better physical abilities after drastic body weight reduction, lower food intake affects energy supplies significantly which eventually reduces physical ability. Early and quick diagnosis and quick treatment are priorities for risk control and development of eating disorders prevention, which ensures perspective in this study.

## CONCLUSION

The female elite athlete group is under statistically higher risk for the development of eating disorders compared to the control group if following factors are taken as indicators of higher risk: attitude towards looks and body weight, objections (influence) of environment to one's looks or weight, usage of weight loss products (diuretics, laxatives and appetite suppressants) and BMI value lower than 18.5 kg/m<sup>2</sup>. There is no statistically significant difference among the athlete groups.

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## SAŽETAK

*Trend povećanja broja žena koje aktivno učestvuju u sportu drastično je porastao u zadnjih nekoliko decenija, donoseći mnoge zdravstvene benefite ali i neke ozbiljne štetne posljedice po zdravlje. Među njima se izdvaja Ženska sportska trijada, sindrom koji obuhvata poremećaje ishrane, menstrualnog ciklusa i osteoporoze. Poremećaji ishrane su prva karika na koju se vežu ostale, a rizik za njihov nastanak često ostaje neprepoznat uprkos specifičnostima koje nose pojedine vrste sportova. Često počinju restrikcijama u ishrani (dijeta) ili nekom nezdravom navikom u ishrani. Ciljevi rada su bili utvrditi rizike za nastanak poremećaja ishrane određivanjem: parametara tjelesne kompozicije i štetnih navika u ishrani i praćenjem faktora rizika predloženih od strane Američke akademije porodičnih ljekara. Ispitanice su bile elitne sportistkinje (111) podijeljene u tri grupe sportova (igre sa loptom, ples i atletika), svaka sa različitim rizicima za nastanak poremećaja ishrane. Kontrolnu grupu (27) činile su studentice, nespportistkinje. Ispitanicama je određena tjelesna kompozicija, BMI i popunile su upitnik sastavljen od pitanja kojim se procjenjuje rizik za poremećaje ishrane u primarnoj zdravstvenoj zaštiti. Rezultati govore o statistički značajno većem riziku za razvoj poremećaja ishrane u grupama sportistkinja u odnosu na kontrolu ako se prate odgovori na skrining pitanja ili navike u ishrani. Niska vrijednost BMI ispod 18,5 kg/m kao direktni kriterij energetskog deficit je takođe bila značajnije zastupljena ( $p < 0,05$ ) u uzorku sportistkinja. Zaključuje se da aktivno bavljenje sportom nosi povećan rizik za pojavu poremećaja ishrane prateći vrijednosti tjelesnih indeksa i ciljanih skrining pitanja.*

**Ključne riječi:** *ženska sportska trijada, poremećaji ishrane u sportu, tjelesna kompozicija.*

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