

DANCERS' BODY: THE EXAMINATION OF HEALTH, BODY SATISFACTION, BODY ATTITUDES, EATING ATTITUDES, AND SELF-ESTEEM AMONG DANCERS

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Abstract

Objective: to conduct research on health state, body satisfaction, eating disorders (EDs), body investments, and self-esteem among adult dancers.

Methods: General Health Questionnaire, WHO Well-Being Index, Body Satisfaction Scale, Human Figure Drawing Test, Body Investment Scale, Eating Attitudes Test, Rosenberg Self-Esteem Scale.

Results: 45.8% of female and 21.2% of male dancers have significant symptoms/diseases. 7.4% of females are underweight, besides 5.9% of females and 15.6% of males are overweight. 11.6% of females are at risk for EDs. Ballroom dancers are the most dissatisfied with their body and weight, and they are the most symptomatic concerning EDs. Modern dancers are the most protected regarding body-related extremes. Female dancers under 20 have stricter body evaluation, less body protection, more bulimic symptoms, and less self-esteem.

Conclusions: An intervention programme should be implemented in dance education that provides both theoretical and practical knowledge with the participation of experts in the field of health, education, and child care as well. This may help dancers to improve health, endurance, body image, and self-esteem. The prevention of EDs must be a priority in this initiative.

Keywords: dancers, body image, body satisfaction, eating disorders, self-esteem, state of health

1. INTRODUCTION

The world of dance is twofold: its many possibilities and extremities have also become the center of publicity. The dance is one of the most ancient art forms that is a special entity of communication, personality development, self-expression, and the transmitting of thought. Most of the publications emphasize its positive effect on the human body, mood, self-esteem, and body image (Langdon & Petracca, 2010; Allen, Telford, Telford & Olive, 2019). Dance therapies are also a key factor in processing physical and psychological trauma (Pierce, 2014; Ventura, Barnes, Ross, Lanni, Sigvardt & Disbrow, 2016). On the other hand, the prevalence of eating disorders, body image disorder, anxiety, depression, acute and chronic burnout, menstruation disorder in women, musculoskeletal injuries (sprains, fatigue fractures), metabolic disorders and deficiency diseases is higher among professional dancers. These disorders are brought on the persistent insufficient calorie intake (Zuława & Pilch, 2012).

Why do these extremes emerge among dancers? In terms of shape and weight, each dance genres have different expectations. However, it is common to aim for a thin, aesthetic body. Making a huge effort for thinness frequently destroys the dancers because they have to be light and robust at the same time. For compliance, abnormal eating habits (starvation, waterspout, extremely low carbohydrate diets) and symptoms affecting endurance and mood may also occur. These topics are most commonly studied among ballet dancers. Nevertheless, body-related studies involving modern dancers, street, and jazz dancers are also available (Krasnow & Kabbani, 1999; Swami & Tovée, 2009; Langdon & Petracca, 2010; Diogo, de Oliveira Ribas & Skare, 2016).

The objective sizes of the ideal body for dancers are unknown. Generally, the body mass index (calculated from body weight and height, briefly: BMI) is used for body feedback. However, this value does not seem able to apply to participants of dance training and competitive athletes. Adult categories cannot be used in childhood because the body structure is still changing. Hence, BMI should be included in the percentile category appropriate to children's sex and age (Polyák, 2015). The requirements referred to the body and the drive for thinness are emphasized from the beginning of training. The feedback connected to performance is based on competition; therefore, in professional dance training, the students' relationship with their own body is fundamentally linked to competition, withdrawal, continuous level of maintenance, and anxiety. Our common goal is to change these conditions, and the dancers can start to work in a healthy and resilient way. How to protect dancers from these severe somatic and psychological problems and prepare them for the ongoing fierce competitions during the training? Where is the border between the positive and negative effects of the dance?

This study aims to clarify the basic psychological concepts related to body image and to examine the relationship to the body, body sizes, body satisfaction, physical and mental health, quality of life, eating attitudes, and self-esteem among adult dancers. The first Hungarian comprehensive study results are summarized, genres and age compare the dancers' answers.

2. BODY IMAGE

The term *body image* has been used frequently both in technical and ordinary language over the last two decades. Other terms (body schema, body concept, body percept, body evaluation, visual-postural model, body border, body awareness) is also used to describe body image, making difficult to understand the concept. It is a common mistake that body attitudes and body satisfaction are also used as synonyms for body image. These factors are related to body image, but there is a sharp boundary between these concepts. Body image is a multi-dimensional phenomenon that involves psychological experiences, attitudes, and interactions related to one's own body (McCrea, Summerfield & Rosen, 1982). Body image has a significant effect on self, mood, well-being, behavior, and self-esteem (Szabó, 2000).

Currently, Cash's cognitive-behavioral model is the most comprehensive description of body image (Cash, 2002). According to Cash, the body image is formed in the coherent system of cultural socialization (body-related social media messages), interpersonal experiences (feedback from a parent, teacher, coach, peer group), physical characteristics, and personality traits (perfectionism). Circular causality can be assumed between the factors that develop and influence body image while it is difficult to decide when these factors appeared, with what emphasis, and how they influence the presence or formation of other factors. These factors affect body image schemas and body attitudes that include semantic processing of appearance, internal thoughts, interpretations, conclusions about the body, body image-related emotions, and finally, coping and self-regulatory strategies and behaviors.

Body image development is a complex process from the presence of self-consciousness ("I exist, and I am different from the objects and people in the outside world") to the model outlined by Cash. In early childhood, the body appears as a mental representation, and a body schema is created to which feelings and thoughts are attached. This construct is formed by interpersonal and intrapersonal experience (Kearney-Cooke, 2002). The latter is closely linked to body satisfaction as they significantly influence it in a positive or negative direction. There is no total agreement on the definition of positive or negative body image. According to Cash (2002), the satisfaction with the whole body and body details are also referred to in the publications. In the case of examination of dancers, both of the above-mentioned factors should be measured. Body dissatisfaction is a risk factor from childhood, and its weight continuously increases in adolescence. In extreme cases, body image distortion, eating disorders, and depression may be developed (Smolak, 2011). Media platforms enhance this effect in the online space, causing adolescents to internalize dysfunctional thoughts, which results that the appearance and the feedback about it become a central part of self-esteem.

Body image is significantly important because it constitutes the basics of personality and identity during development. Bodily changes associated with growing affect components of the body image in all development stages (Csenki, 2015). The concept of body image is essentially linked to self-esteem, self-efficiency, and performance. Besides, body dissatisfaction also plays a prominent role in the development of eating disorders (Lantos, Iván & Pászty, 2008).

3. DANCE-RELATED EXTREMES IN THE WORLD OF DANCE

Imagine an elementary school pupil whose dream is to be a great dancer. In addition to school-related duties, he or she invests all of his or her capacity to provide good performance in professional dance classes, to meet physique requirements, to be strong and flexible, and he or she also must have charisma. The competition among dance students is fierce; the expectations are high. In order to improve performance, 'useful advices', dubious information, drastic training techniques, fashion diets, weight loss tricks are bombarding the future dancer from the social environment and the online space, that, while being successful in the short term, will make dance students' physical and/or mental state worse over time as extremes usually have negative consequences.

3.1. Injuries

To achieve an aesthetic body suitable for a stage appearance, the dancers' constant goal is to reach and maintain the ideal body weight. Dance requires endurance, muscle strength, flexibility, and adequate stability of the joints at the same time. The sequences of movements are complex, the range of motions is often very wide. Meanwhile, mobility, static and dynamic effort, stability, and balance are all important. Newer dance styles require the dynamism of body movements that must be sharp and fast, the position of the body must be changed quickly and accurately.

All of this requires stable neuromotor control, strength, speed, coordination, flexibility, and balance on behalf of the dancers (Diogo et al., 2016).

Exercising the body is painful for dancers on both an amateur and professional level. According to a Brazilian study, 58.6% of dancers surveyed report pain, regardless of genre. The most common injuries occur in the spine (lower back, cervical spine, middle back) and the lower limbs (Diogo et al., 2016). Injuries are most common among dancers between the ages of 8 and 16 due to inappropriate posture, anatomical anomalies, bad dance techniques, insufficient warm-up, and disproportionate load on muscle groups (Arabia, Arabia & Hoyos, 2013). However, it is not exclusively the extreme strain on the body that is behind the injuries. Inadequate nutrition and decreased bone density due to poorly chosen diets also contribute to fatigue fractures (also known as overuse or stress fractures).

3.2. Body image disorder

On the basis of several study results, exercises help reduce tension, anxiety, depression, and improve psychological well-being, self-esteem, and body image, regardless of age and gender. More physically active people have a much more positive self-image (Hausenblas & Fallon, 2006; Nordin-Bates, Walker, Baker, Garner, Hardy, Irvine, Jola, Laws & Blevins, 2012). Dance also has a beneficial effect on body image and body perception (Burgess, Grogan & Burwitz, 2006; Vaquero-Cristobal, Alacid, Muyor, & Lopez-Minarro, 2013; Varnes, Stollefson, Janelle, Dorman, Dodd, & Miller, 2013). This can be measured from primary school age. Monteiro et al. (2014) confirm that 9–15-year-old girls who go to dance have higher self-esteem, are more satisfied

with their body weight and appearance. However, in reviewing the literature, we can also find contradictory results, as we do not know exactly how intensely and in what genre the studied groups danced. The long-term effects of dance were reported by Ackard et al. (2004) in an interesting study. They found that childhood dance lessons are likely to impact adult eating behavior, affecting several appearance-related behavioral modes and regulation. This is because students who went dancing in their childhood had lower ideal body weight, lower impulse control, and a stronger desire for thinness, in contrast to students who did not attend dance classes in their childhood. The authors do not report details about the genre of dance practiced in childhood.

Body dissatisfaction is common among dancers in professional training in all age groups (Kazarez, Vaquero-Cristóbal & Esparza-Ros, 2018). According to the results of Özgen & Kisac (2009), 31.9% of the dancers they interviewed are dissatisfied with their bodies. This dissatisfaction creates a negative body image, which in extreme cases can develop into body image disorder. *Body image disorder* is a complex disorder of the body experience (Túry & Szabó, 2000). A characteristic symptom is that the individual cannot define his or her own body according to the realities but thinks and perceives different dimensions for himself or herself. Body image disorder is more common among dancers (Ravaldi, Vannacci, Zucchi, Mannucci, Cabras, Boldrini & Ricca, 2013), which is also supported by the fact that they usually want to lose weight despite their adequate BMI.

There is a high level of body dissatisfaction among dancing female adolescents (12 to 17 years of age), which shows an intense increase, especially at the age of 14–16. The correlation between body dissatisfaction and drive for thinness was shown to be statistically strongly significant, and this process may be associated with disordered eating (Jones, Buckner & Miller, 2014). This association was also observed among adult dancers, where the body dissatisfaction of the dancers' group and their drive for thinness were higher compared to the non-dancer group. Dancers often exercised more than prescribed, they trained so that to burn calories, and their energy supply was lower than that of the control group (Robbeson, Kruger & Wright, 2015). In another study, the exercise dependence of dancers was compared to that of female runners and hockey players. The results showed that the dancers' group achieved the highest scores on the exercise addiction scale (Pierce, Daleng & McGowan, 1993).

Due to physical exertion levels and overlapping problems, parallels are often drawn between dance and sport. A typical problem, the so-called *female athlete triad*, is common in both dancers and athletes. The triad's three components are lower-than-necessary caloric intake (and the resulting thinness), menstrual disturbance, and low bone density (Tosi, Maslyanskaya, Dodson & Coupey, 2019). According to the study results of 712 subjects, the risk for the development of the triad in dancers (n=199) is higher than in figure skaters (n=430) or, in runners (n=83), 72% of dancers are at risk in this respect (Tosi et al., 2019). The female athlete triad was found in 40% of female professional ballet dancers aged 18–35 (Doyle-Lucas, Akers & Davy, 2010).

3.3. Eating disorders

Many biological, psychological, and sociocultural factors play a role in developing and maintaining eating disorders. In addition to the two best-known eating disorders, *anorexia nervosa* and *bulimia nervosa*, new ones have been described in the last 30 years: *orthorexia nervosa*, *binge eating disorder*, and *purging disorder* (Túry & Pászthy, 2008). Due to space limitations, only the characteristics of anorexia nervosa and bulimia nervosa are discussed in the present study. The symptoms of these two severe psychiatric disorders are precisely defined by the DSM-5 criteria (American Psychiatric Association, 2013; *Tables 1* and *2*). Eating disorders are common diseases: in women, the lifetime prevalence of anorexia nervosa is 0.9%, that of bulimia nervosa is 1.5%, that of binge eating disorder is 3.5%, and that of subclinical eating disorders is 10% (Treasure, 2020).

- A. Restriction of energy intake relative to requirements, leading to significantly low body weight in the context of age, sex, developmental trajectory, and physical health. *Significantly low weight* is defined as a less than minimally normal weight or, for children or adolescents, less than that minimally expected.
- B. Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain, even though at a significantly low weight.
- C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.

Restrictive type: During the last three months, the individual has not engaged in recurrent episodes of binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas). This subtype describes presentations in which weight loss is accomplished primarily through dieting, fasting, and/or excessive exercise.

Binge-eating/ purging type: During the last three months, the individual has engaged in recurrent episodes of binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

Table 1. DSM-5 diagnostic criteria for anorexia nervosa
(American Psychiatric Association, 2013)

<p>A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:</p> <ol style="list-style-type: none"> 1. Eating, in a discrete period of time (e.g., within any 2-hour time period), an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances. 2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating). <p>B. Recurrent inappropriate compensatory behaviors in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise.</p> <p>C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for three months.</p> <p>D. Self-evaluation is unduly influenced by body shape and weight.</p> <p>E. The disturbance does not occur exclusively during episodes of anorexia nervosa.</p>
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Table 2. DSM-5 diagnostic criteria for bulimia nervosa
(American Psychiatric Association, 2013)

Dancers, along with special athlete groups, are at increased risk for eating disorders. Several study results suggest this, e.g., according to a meta-analysis, the lifetime prevalence of eating disorders is 50% for professional dancers and 13.6–26.5% for young dancers (Hincapié & Cassidy, 2010). In another study, only 42.5% of 127 dancing girls had a normal body mass index, and 15.7% were severely lean (Burckhardt, Wynn, Krieg, Bagutti & Faouzi, 2011).

Several data are available on eating disorders in adult ballet dancers. In an early study, le Grange Tibbs and Noakes (1994) examined the prevalence of eating disorders among young adult ballerinas (n=49), anorexia nervosa could be diagnosed in 4.1% of dancers (age: 18.9 ± 1.9 years), and *partial syndrome* anorexia nervosa was present in 8.2% of dancers. The daily caloric intake of adult female professional ballet dancers (n=14, age: 18-35 years) was 76% of the control group, and their resting metabolic rate was also significantly lower than that of the control group (Doyle-Lucas, Akers & Davy, 2010).

Nascimento et al. (2012) examined the prevalence of eating disorders and body image disorder among elite professional female ballet dancers (n=19, age: 34.5 ± 8.8 years). According to their results, the lifetime prevalence of anorexia nervosa was 15.8%, while 10.5% of ballerinas had a special body image disorder, body dysmorphic disorder. According to the authors, higher beauty expectations, public exposure of the body, and constant exposure to the mirror in rehearsal rooms may contribute to the development of body image disorders among ballet dancers.

Among adolescents, the incidence of eating disorders is similar, Liu, Tseng, Chang, Fang, and Lee (2016) examined 442 female high school dance students. Among them, 15.4% (68 individuals) had an eating disorder, 47.1% of the eating disorder group also had a mood disorder, and 40.9% had an anxiety disorder. Accord-

ing to the study results, the development of eating disorders was mostly driven by body-related teasing, jokes, and body image disorder. In a similar study, in a group of 13-18-year-old female ballet dancers ($n=239$), 29.3% reported fasting, 9.6% vomiting, and 4.2% taking laxatives to control body weight (Thomas, Keel & Heatherton, 2011). It is important to point out after reviewing the studies carried out among dancers that symptoms of clinical and subclinical eating disorders, as well as depressive and anxiety syndromes, also appear in the majority of studies.

Diogo et al. (2016) examined professional and amateur dancers of several genres. The study population included classical ballet dancers, jazz dancers, and street dancers, all over 13 years of age. 34.6% of dancers are at risk for eating disorders, which is most common among girls, ballet dancers, and those with high anxiety scores. Eating disorders are less common among jazz dancers. Nearly 20% of the sample is at risk for bulimia, which affected both professional and amateur dancers. Amateur dancers are more dissatisfied with their bodies; 96% consider a lower body weight to be ideal for themselves, while this value is only 54.1% for professional dancers (Diogo et al., 2016).

4. METHODS

4.1. Participants

The study participants were students of the Hungarian Dance University who filled in a paper-based questionnaire during the psychology courses or forwarded the questionnaires to their acquaintances dealing with dance. For the most part, students in the artist training and dance teacher training participated in the research. The participants completed the questionnaires on a voluntary and anonymous basis. This took about 20 minutes at the end of the class.

Last year, a total of 151 students attended one of the psychology courses. One hundred eight students participated in the study. Two of them were excluded due to pregnancy. Respondent dancers ranged in age from 17 to 51 years ($M=23.84$, $SD=5.98$), with 67% female ($n=71$) and 33% male ($n=35$) based on gender distribution. As the completion of the questionnaire was related to a university course, it is not surprising that 49.5% ($n=53$) have a secondary education and 48.6% ($n=52$) have a higher education degree. 34.6% of the respondents were professional dancers ($n=37$), 43% were non-professional dancers ($n=46$), and 22.4% did not answer ($n=24$) this question. The authors formed additional subgroups so that to carry out a more detailed statistical analysis. Based on age, 3 groups were distinguished: Group 1 was 17-19 years old ($n=19$, 17.9%); Group 2 20-29 years old ($n=77$, 72.6%); Group 3 were over 30 years of age ($n=10$, 9.4%).

In terms of dance genres, 32.7% of the participants deals with folk dance ($n=35$), 2.8% with classical ballet ($n=3$), 5.6% with modern dance ($n=6$), 11.2% with modern ballroom dance ($n=12$) and 0.9% with theater dance ($n=1$). The authors compared specializations only along folk dance, modern dance, and modern ballroom dance groups because the number of participants in classical ballet and theater dance groups was too low. Fifty subjects did not answer the question about specialization. On the one hand, this is due to the fact that some of the questionnaires issued did

not contain this question, and, on the other hand, when the question was available, some did not answer it, probably wanting to avoid identification. In the following survey, online completion is more appropriate for this reason as well.

4.2. Measures

The self-report questionnaire (*Table 3*) consisted of 7 major sections and included the following:

- demographic issues,
- anthropometric issues,
- general health issues:
 - Health Survey (after this and briefly: SF-36, Ware & Sherbourne, 1992; Hungarian version: Czimbalmos et al., 1999)
 - In general, would you say your health is: Excellent – Very good – Good – Fair – Poor
 - General Health Questionnaire (after this: GHQ, Goldberg, et al., 1978; Hungarian version: Karczag, 1988)
 - WHO Well-being Index (WBI-5) (Bech et al., 1996), translated and validated into Hungarian by Susánszky et al. (2006)
- body satisfaction:
 - Body Satisfaction Questionnaire, briefly and hereafter BSQ (Folk, Pedersen & Cullary, 1993), translated into Hungarian by Szabó in 2003
 - Human Figure Drawing Test (HFDT, Fallon & Rozin, 1987), translated into Hungarian by Szabó in 1991
- body-related attitudes: Body Investment Scale (BIS, Orbach & Mikulincer, 1998), translated into Hungarian by Lukács-Márton & Szabó in 2013
- eating-related attitudes: Eating Attitudes Test, 12-item version (EAT-12, Garner & Garfinkel, 1979), translated into Hungarian by Túry et al., 1990)
- self-esteem: Rosenberg Self-Esteem Scale (briefly and after this: R-SES, Rosenberg, 1965), translated into Hungarian and validated by Sallay et al., 2014)

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Sections of the questionnaire	Measure	Subscales	Number of items
1. Demographic data			4
2. Anthropometric data			10
3. General health	Health Survey (SF-36)		1
	WHO Well-being Index (WBI-5)		5
	General Health Questionnaire (GHQ-28)	Somatic complaints	7
		Anxiety and insomnia	7
		Social dysfunction	7
Depression		7	
4. Body satisfaction	Body Satisfaction Questionnaire (BSQ)		10
	Human Figure Drawing Test (HFDT)		7
5. Body-related attitudes	Body Investment Scale (BIS)	Body image feelings and attitudes	6
		Comfort in touch	6
		Body protection	6
		Body care	6
6. Eating-related attitudes	Eating Attitudes Test (EAT-12)	Oral control	4
		Dieting	4
		Bulimia	4
7. Self-esteem	Rosenberg Self-Esteem Scale (R-RES)		10

Table 3. Structure of the self-report questionnaire

4.3 Statistical analysis

The results were analyzed with the SPSS 25.0 program; no control group was used for comparison. A normality test was performed on the questionnaire data. As the Shapiro-Wilk test result revealed, the vast majority of the variables do not show a normal distribution ($p < 0.005$). Therefore nonparametric tests were used.

For correlation analyses, the Kendall tau rank correlation coefficient was calculated. The Mann-Whitney test was used to compare two subgroups, and the Kruskal-Wallis test was used to compare more than two subgroups.

5. RESULTS

5.1. Anthropometric results

The body mass index was calculated based on anthropometric data, and these results were classified into three categories. The majority of respondents, 80.4% (n=86) had normal weight (BMI=18.5-24.9), 8.4% of dancers (n=9 people) were overweight (BMI=25.0-29.9), and 4.7% (5 people) were lean (BMI <18.5). Six subjects (6.5%) did not provide the data needed to calculate the BMI index. Due to the small size of the overweight and lean groups, we cannot compare the groups according to BMI categories.

Among females, 86.7% (n=59) had normal BMI, 7.4% (n=5) were lean and 5.9% (n=4) were overweight. In the group of males, 84.4% (n=27) had normal BMI, 15.6% (n=5) were overweight, while no lean dancer was found in the group of men.

5.2. General health outcomes

Health state was assessed with the General Health Questionnaire (GHQ-28) and one item of the Health Survey (SF-36). With regard to possible psychiatric caseness, using the GHQ-28, a 5/6-point threshold identifies risk, and an 11/12-point threshold determines high risk (Goldberg & Hillier, 1979; Goldberg & Williams, 1988).

The total score of GHQ-28 indicates the presence of somatic and mental illness in 20 individuals (19.41%). Among females, 22.9% (n=16) have symptoms, 22.9% (n=16) have some disease, i.e. 45.8% are unhealthy. Among male dancers, 78.8% are healthy, 9.1% (n=3) have symptoms, and 12.1% (n=4) likely have some illness. The internal reliability of GHQ-28 is adequate based on Cronbach's alpha values of the subscales and the total score (0.741–0.818).

5.3. Results related to body satisfaction

Satisfaction with body parts is assessed with the Body Satisfaction Scale (BSQ), where the items are scored along a 5-point Likert format continuum ranging from very dissatisfied (1) to very satisfied (5). Dancers are the most dissatisfied with their body in general (mean=3.26, SD=0.979), body weight (mean=3.02, SD=1.193) and physical fitness state (mean=3.25, SD=1.153) in comparison with other body parts. It is an interesting result that the satisfaction of dancing females and males with their body and body parts does not differ from each other. The only body part with that females are more dissatisfied are their legs (U=0.1529, p=0.009).

Body satisfaction (as measured with the second item of the Body Satisfaction Scale) is in significant negative correlation with the Anxiety and insomnia subscale (GHQ) (r=-0.268, p=0.001), the Social dysfunction subscale (GHQ) (r=-0.226, p=0.007) and the total score of the General Health Questionnaire (r=-0.277, p<0.001),

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the Dieting subscale ($r=-0.434$, $p<0.001$) and the total score of the Eating Attitudes Test ($r=-0.346$, $p<0.001$). This means that the more dissatisfied the dancers are with their bodies, the more intensely anxious, retreating from social areas, and overall feeling less healthy. However, the body satisfaction score (Item 2 of the Body Satisfaction Scale) shows a significant positive correlation with the Body image feelings and attitudes subscale (BIS) ($r=0.607$, $p<0.001$), with the total score of the BIS ($r=0.407$, $p<0.001$), and the WHO Well-being Index ($r=0.321$, $p<0.001$). Thus, high body satisfaction is associated with a higher quality of life in the group of dancers, low eating disorder scores, especially low dieting scores, body-related positive emotions, and body-related investments. Interestingly, body satisfaction is not related to current body weight but to the difference between current and desired body sizes (body weight, BMI).

The Human Figure Drawing Test proved to help evaluate body image. The value of the current body shape is in significant negative correlation with the Body image feelings and attitudes scale of BIS ($r=-0.251$, $p=0.001$) and the Oral control scale of EAT ($r=-0.237$, $p=0.005$). However, the current body shape values show a significant positive correlation with the Dieting subscale score of EAT ($r=0.369$, $p<0.001$). The greater the current body shape is perceived, the more negative the emotions and attitudes are about the body, the higher the dieting tendency, and the lower the Oral control subscale score.

5.4. Eating disorder related results

Eating disorders may be suspected based on the total EAT-12 score. No males scored above the threshold (9 points) on the EAT, while 11.6% ($n=8$) of females reported eating disorder symptoms scoring above the threshold.

The EAT total score is in relationship with several variables. It shows a significant negative correlation with body satisfaction ($r=-0.346$, $p<0.001$), weight satisfaction ($r=-0.354$, $p<0.001$), and the difference between current and desired body weight ($r=-0.211$, $p=0.009$), the desired BMI ($r=-0.273$, $p=0.001$), the Body image feelings and attitudes subscale of the BIS ($r=-0.334$, $p<0.000$), the BIS total score ($r=-0.204$, $p=0.007$), and the value of the Health Survey (SF-36) score ($r=-0.198$, $p=0.008$). The more common the eating disorder symptoms are, the lower satisfaction with the body and weight is, the greater the perceived difference between current and desired weight, the lower the desired BMI, the poorer the presence of body-related emotions, the degree of investment in the body, and the worse quality of life are.

Correlational analysis revealed a significant positive correlation between total EAT score and the Anxiety and insomnia subscale of the GHQ ($r=0.202$, $p=0.009$), the difference between current and ideal body shape ($r=0.378$, $p<0.001$) and the difference between current and desirable BMI ($r=0.311$, $p<0.001$). Eating disorder-related scores are associated with anxiety symptoms and a significant difference between current and desired body shape and BMI. The latter reflects dissatisfaction with the body.

5.5. Self-esteem

Self-esteem was assessed with the Rosenberg Self-Esteem Scale (R-SES) in the dancer group. The score of R-SES was in significant positive correlation with the satisfaction with body ($r=0.149$, $p<0.001$), with the satisfaction with weight ($r=0.261$, $p<0.001$), with desired BMI ($r=0.255$, $p<0.001$), with the Body image feelings and attitudes subscale of the BIS ($r=0.505$, $p<0.001$), with the Body contact subscale of the BIS ($r=0.193$, $p=0.001$), the Body Protection subscale of the BIS ($r=0.207$, $p<0.001$), with the total score of the BIS ($r=0.431$, $p<0.001$), and with the score of the Health Survey ($r=0.359$, $p<0.001$). This means that a higher self-esteem scores among dancers are accompanied by higher body and weight satisfaction, higher desirable BMI, more positive perception of the body, more positive emotion and attitudes towards the body, and the fact that the individual prefers physical contacts with other persons, protects his or her body more and has a higher quality of life.

The self-esteem score on the R-SES was in significant negative correlation with the score of the Health Survey's first item ($r=-0.425$, $p<0.001$), with the total GHQ-28 score ($r=-0.307$, $p<0.001$), and with all subscales of the GHQ-28, with the total score of the EAT-12 ($r=-0.246$, $p=0.001$), with the Dieting subscale of the EAT ($r=-0.207$, $p=0.007$), and with the difference between current and ideal body shapes ($r=-0.176$, $p=0.025$). Thus, the higher the self-esteem, the healthier the dancer is physically and mentally, the lower his or her eating disorder scores, and the smaller the difference between his or her current and ideal body shapes.

5.6. Differences between special subgroups

One of our objectives was to divide dancers into further subgroups instead of treating them as a homogeneous group. We formed subgroups according to sex, age, and specializations and compared professional and amateur dancers. Based on the chi-square test, there is no difference in the sex distribution between the professional and amateur groups ($\chi^2=0.051$, $p=0.822$).

Among females, the difference between professionals and amateurs was examined using the Mann-Whitney test. There was a difference only in terms of education; the professionals are more qualified ($U=237.5$, $p=0.006$). Performing the same comparison in the group of men, we found greater differences. Among male dancers, the professionals are older ($U=23.5$, $p<0.001$), the ideal female figure is considered thinner ($U=36.5$, $p=0.025$), and male professional dancers score higher value on the Body care subscale of BIS ($U=37.5$, $p=0.023$), in comparison with amateurs (*Table 4*).

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Variable	Professional (n=12) Mean (Mean Rank)	Amateur (n=16) Mean (Mean Rank)	Mann-Whitney U	p
age	28.50 (20.54)	20.88 (9.97)	23.5	0.001
ideal female body shape	3.54 (9.32)	4.32 (15.89)	36.5	0.025
BIS: Body care	22.00 (17.75)	20.31 (10.84)	37.5	0.023

Table 4. Differences between professional and amateur groups in male dancers

5.7. Age groups

Based on age and active dancer career, the authors divided the dancers into three groups: young dancers (17-19-year old), active dancers (20-29-year old), and older dancers (older than 29-year old). When creating the above groups, the authors considered the development of the dancer's career (Mihályi & Szalay, 2015) and Erikson's theory of psychosocial development (Erikson, 2002).

When comparing the dancers by age group with the the Kruskal-Wallis test, there were several significant differences, e .g. concerning current body shape ($H=10.122$, $p=0.006$), the Body protection subscale of the BIS ($H=6.6622$, $p=0.036$), the Bulimia subscale of the EDI ($H=7.768$, $p=0.021$) and the Rosenberg Self-esteem Scale ($H=10.122$, $p=0.006$) (*Table 5*). In the Human Figure Drawing Test, the youngest dancers indicated a significantly thinner current body shape than the active and older dancers ($p<0.005$).

Further differences occurred between the youngest and older age groups. The difference in the Body Protection subscale of the BIS between the two groups ($p=0.030$) shows that young dancers pay less attention to protecting of their body. Correlation studies in the whole sample also confirm this. Age is in a significant positive correlation with the Body protection subscale of the BIS ($r=0.212$, $p=0.004$). So the older the dancer, the better he or she protects his body, the more attention he or she pays to maintain bodily health.

The Bulimia subscale scores of the EAT also show a significant difference between the younger and older groups ($p=0.020$). Bulimia symptoms are more common in the younger group.

Finally, the Rosenberg Self-esteem Scale scores show that younger dancers' global self-esteem is much lower than that of older dancers ($p=0.040$).

Variable	< 20 (n=19)	Age (years) 20-29 (n=77)	> 29 (n =10)	Kruskal- Wallis (H)	P
current shape (Human Figure Drawing Test)	2.88 (33.78)	3.64 (52.51)	4.66 (67.67)	10.122	0.006
Boda care (BIS)	21.83 (40.25)	23.52 (52.51)	25.66 (70.56)	6.622	0.036
Bulimia subscale (EAT-12)	1.31 (63.05)	0.68 (51.06)	0.00 (36.50)	7.768	0.021
self-esteem (R-SES)	28.22 (38.72)	30.70 (49.96)	34.44 (67.44)	10.122	0.006

Table 5. Comparison of age groups

5.8. Differences according to specializations

Using the Kruskal-Wallis test, the authors found significant differences among the modern ballroom dance, folk dance, and modern dance groups (Table 6). There is a significant difference among the three subgroups regarding body satisfaction (Item 2 of the Body Satisfaction Questionnaire) ($H=8.939$, $p=0.011$). Ballroom dancers differ significantly from both groups ($p<0.005$); they have the lowest body satisfaction. Satisfaction with bodyweight (Item 9 of the Body Satisfaction Questionnaire) also showed a significant difference ($H=11.449$, $p=0.003$), with the highest degree of dissatisfaction in the ballroom dance group ($p<0.005$).

The total score of the EAT also differs significantly between specializations ($H=12.036$, $p=0.002$): in this case, too, the ballroom dancer group shows the most abnormal value ($p<0.005$). The score of the ballroom dancing group is also the highest on the Dieting subscale of the EAT ($H=12.042$, $p=0.002$) ($p<0.005$). On the Bulimia subscale of the EAT ($H=6.374$, $p=0.041$), there is a significant difference between the ballroom dance and folk dance groups ($p=0.040$).

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Variable	Ballroom dance (n=12) Mean (Mean Rank)	Folk dance (n=35) Mean (Mean Rank)	Modern dance (n=6) Mean (Mean Rank)	Kruskal- Wallis (H)	P
Satisfaction with body (BSQ)	2.75 (16.33)	3.63 (29.40)	4.00 (34.33)	8.939	0.011
Satisfaction with weight (BSQ)	2.25 (14.92)	3.40 (29.40)	4.00 (37.17)	11.449	0.003
EAT-12 Total score	6.00 (37.75)	2.56 (24.88)	0.5 (13.17)	12.036	0.002
EAT-12 Dieting	3.83 (38.08)	1.29 (16.42)	0.16 (24.19)	12.042	0.002
EAT-12 Bulimia	1.41 (34.04)	0.20 (24.24)	0.33 (0.33)	6.374	0.041

Table 6. Summary of differences among dance genres

It is remarkable that in comparison with the folk dancers and modern dancers, the ballroom dancers score significantly higher on the Dieting subscale of EAT-12 in both sexes. Comparing the 4 groups of female dancers (folk dance, ballet, ballroom dance, modern dance), there are significant differences in body satisfaction (SBQ) and in weight satisfaction (BSW) ($H=12.297$, $p=0.015$ and $H=15.128$, $p=0.004$), as well as on the Dieting subscale ($H=11.721$, $p=0.020$), on the Bulimia subscale ($H=17.726$, $p=0.001$) and in the total score of the EAT-12, ($H=11.134$, $p=0.025$). In all cases, ballroom dancer females have the highest and more pathological scores.

6. DISCUSSION

According to the authors' results, dancers are in poor health, almost 20% may have some illness, and even more, dancers have somatic and/or mental symptoms. Nearly half of the females (45.8%) have significant symptoms or suffer from an illness. This fact is remarkable concerning injury risks and endurance and calls for intervention. The health-related data are in agreement with the Hungarian results of a cross-cultural comparative study. According to the data of Rathner et al. (1995), 20.7% of Hungarian female medical students are presumably ill, and a further 24.8% have symptoms (45.5%). Among Hungarian male medical students, 9.7% of the respondents may have a disease, and another 22.2% have symptoms.

Of the dancers, 80.4% ($n=86$) have normal BMI. In females, 7.4% ($n=5$) are lean; there is no lean individual among males. Dancing males need a certain amount of muscle mass to lift and jump; however, this varies from genre to genre. This could explain why there is no lean person among male dancers. In contrast, females must produce a slim figure according to the criteria of an aesthetic body to perform on the stage. There were some overweight dancers in the female and male groups:

5.9% (n=4) and 15.6% (n=5), respectively. However, there were no obese individuals in the sample.

The authors' results show a much more favorable picture than similar studies. Only 42.5% of dancers had normal BMI, and 15.7% of the sample were severely lean in another survey (Burckhardt et al., 2011). Based on the results, the interventions should address weight loss and higher body weight.

Summarizing the body-related ratings, the dancer group has the lowest satisfaction with the body, body weight, and fitness status compared to other body characteristics. This is consistent with the results of Kazarez et al. (2018), Robbeson et al. (2013), and Özgen & Kisac (2009), according to which dancers in professional training are highly dissatisfied with their bodies. However, body satisfaction is also related to some other variables, such as social activity, anxiety scores, health status, and quality of life. Overall, promoting body satisfaction seems to be a central factor in the dance group, so it is essential to help develop and maintain it in dance training. This is also supported by the fact that the total score of the Body Investment Scale (BIS) and the value of the subscales are also closely related to body satisfaction. The higher the body satisfaction, the more positive the attitudes towards the body and the greater the degree of body protection.

Regarding the frequency of eating disorder symptoms, 11.6% (n=8) of female dancers have a high risk for eating disorders, while among male dancers, everybody scored below the threshold. The prevalence of eating disorders seems to be lower in the present sample than in similar surveys. EAT as a diagnostic tool is not suitable for diagnosing specific eating disorders, but it measures eating disorder symptoms and the severity of eating disorders. The present study results seem to be similar to those of le Grange et al. (1994), who found anorexia nervosa in 4.1% and *partial* anorexia nervosa in 8.2% among adult ballerinas. Nascimento et al. (2012) found the prevalence of anorexia nervosa in a group of elite professional ballerinas to be 15.8%. The prevalence of eating disorders was 15.4% in a large sample of adolescents dancers (Liu et al., 2016). Using more measures, together with a clinical interview, we would get a more accurate picture of the prevalence of eating disorders among dancers.

Comparing the subgroups, the authors also obtained interesting results concerning eating disorders. Bulimia symptoms are more common in the younger age group. The frequency of eating disorder symptoms (dieting, bulimic symptoms) is higher in the modern ballroom dance group among the dance genres. Interestingly, in this group, eating disorder symptoms are present in both sexes. Diogo et al. (2016) found that eating disorder symptoms are more common in ballet-dancing and jazz-dancing girls.

In contrast to the studies cited in the literature review (Pierce et al., 1993; Radell, Adame & Cole, 2020), the authors found several differences between specializations. In addition, to EAT scores, dissatisfaction with body and body weight is also higher in the modern ballroom dance group than in the folk dance and modern dance groups. Considering the appearance on the stage and the physique-related requirements, modern ballroom dancing rules are more permissive than those of ballet. The range of aesthetic physiques accepted on the stage is broader, but it is a fact that in the case of modern ballroom dancing, the competition scores are based on also

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clothing and appearance. As a consequence, eating disorder symptoms may be more common in this group.

The self-esteem of dancers is related to weight satisfaction and BIS scores. The higher the self-esteem, the more intense the body's protection and care, the less the dietary restriction, and the better the health. The self-esteem of younger dancers (under 20 years of age) is very low compared to that of older ones (over 20 years of age), which is associated with a lower level of body protection and body care, all of which can make active dancers more vulnerable. An interesting phenomenon is that at the end of professional training, the self-esteem of beginning dance artists (17-19-year-old) is lower compared to that of the two older groups of dancers (20-29-year-old, over 30) as assessed by the authors. Monteiro et al. (2014) examined the self-esteem of 9-15-year-old female students by BMI category in their study. Girls engaged in dance have higher self-esteem, are more satisfied with their appearance and weight than their non-dancing peers. In contrast, Robbeson et al. (2013) reported that female dancers have lower self-esteem than the non-dancer control group. These authors suggest training for female dancers about the theory and practice of healthy weight management to improve self-esteem.

The present study results urge the use of intervention programs to increase body satisfaction and self-esteem in dancers' professional training.

The professional and amateur dancers did not differ in terms of such relevant variables as body satisfaction, eating disorders, body-related investments, self-esteem, and quality of life. Among females, professional and amateur dancers differed only in the level of education. Male professional dancers are older, more educated, have a greater level of body care, and are stricter when judging the ideal female body figure. In the study by Diogo et al. (2016), amateur dancers reported more eating disorder symptoms and perceived more significant differences between their current and ideal body weight than professional dancers.

7. LIMITATIONS

The greatest limitation of the present study is that it has only a limited control group comparison. In the next study, a control group matched for age, sex, and education level will be added to the dancer group.

The limitations of the research largely concern the instrument used. The questionnaires issued were not completely uniform in terms of general questions. We did not ask all respondents about the specialization. Interestingly, however, several subjects did not answer this question even if it was included in the questionnaire. In the next study, we will use a unified, online questionnaire, where answering the question about specialization will be mandatory. Thus the dance genre will be identified. In this way, all the five major specializations can be compared. To better compare the professional and amateur dancers, the term professional dancer must be more precisely defined.

As to anthropometric data, no objective measurement tool was used. The data were based on self-report. Body size data were often incomplete, so it is advisable to warn participants before completing the questionnaire in the next online survey. A tape measure and scales will be needed.

Finally, several questionnaires should be used to identify eating disorders more accurately. In addition to the 12-item version of EAT and some subscales of the Eating Disorder Inventory (EDI; Garner, 1983; Túry et al., 1997), the Eating Behavior Severity Scale (EBSS) can be used to measure the behavioral symptoms of eating disorders (Yager, Landsverk, & Edelman, 1987). Suspicion of eating disorders can also be screened with the SCOFF questionnaire (Morgan, Reid & Lacey, 1999; Dukay-Szabó, Simon, Varga, Szabó, Túry & Rathner, 2016).

8. CONCLUSION

As the summary of the results, it cannot be postponed to introduce a complex prevention program in dancers' training. The survey's dancing participants are in poor health, and their body satisfaction is closely related to a number of factors that determine their effectiveness (self-esteem, diet, social relationships, anxiety, health, and quality of life). In particular, based on differences between age groups revealed by the research results, it is worth highlighting the vulnerability of the young age group concerning low self-esteem and eating disorder symptoms.

Based on the comparison of dance genres, the modern ballroom dancers are the most vulnerable to eating disorders, and the representatives of the modern dance genre are the most protected. The ballet group results could not be analyzed in the present study due to the small size of the group. The differences between amateur and professional dancers are insignificant for most variables.

Ludányi & Szabó (2017) wrote a detailed review of the eating disorder prevention methods that can be implemented in pedagogical practice. The school can be a setting for eating disorders and body dissatisfaction. Still, it can also be a place for preventive programs, with the active participation of all actors working with students. Nowadays, we have gone from frontal lectures on nutrition to complex programs that include media awareness, debates, posters, and parody videos (Stice, Shaw & Marti, 2007). Other programs have included drama plays to practice conflict situations and improve communication (Haines, Neumark-Sztainer, Perry, Hannan & Levine, 2006). The programs' main purpose is to identify problem individuals, to provide information on the nature of eating disorders, and reduce the number of cases in the future. Instead of individuals, the focus is on communities, changing people's attitudes, resulting in reduced exclusion among students, preventing the identification with the idea of leanness, increasing self-esteem, body satisfaction, self-image, and body image (Ludányi & Szabó, 2017).

Several body-related intervention programs have also been used among dancers, which have maintained their effects after the program has ended, according to follow-up studies. Yannakouli, Yannakouli, Sitara, and Matalas (2002) measured the effectiveness of a prevention program about nutrition and eating disorders among dancers. According to their results, the participants' knowledge remained half a year later. The effect of what they had learned was measurable in the areas of body composition, dieting, and abnormal eating habits, and even experienced further improvements.

Torres-McGehee et al. (2011) educated dancing college students about eating disorders and nutrition. Even four weeks was enough to reduce the dancers' drive for

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thinness, depression scores, body fears, and eating disorder symptoms. Bettle et al. (2001) suggest starting the intervention programs earlier, in early adolescence (at the age of 11-12 years). According to their proposal, body satisfaction should be developed in youth by improving self-esteem, reducing the probability of developing mental illness. Jones et al. (2014) suggest that programs related to nutrition and the formation of a healthy body image must begin at an earlier age, in primary school, because disordered eating drastically increases among adolescent dancing girls from the age of 14. Before that, already at low school age (6-10 years old), it is advisable to prepare dancers for body-related changes. Liu et al. (2016) similarly, based on a study of dancing adolescents, suggest prevention and training programs that, in addition to developing a positive body image, also teach dancers about emotion regulation techniques and strategies for handling body-related feedback.

In summary, dancers need to be prepared for the increased physical and mental strain on their bodies. It is necessary to expand the training of dancers with knowledge of anatomy, nutritional science, psychology, biomechanics, and methods aimed at preventing injuries to make them more prepared and resilient. The Hungarian Dance University is in a particularly good position, as the secondary and tertiary institutions, the student hostel, and the Health Development Center are situated on the same campus. Representatives of the health and education fields can participate in health preservation and health promotion within a joint program framework. Even from school age onwards, children's attitudes towards the body can be shaped, creating a positive body image, body satisfaction, and higher self-esteem. It is important that all participants can be involved in this process: masters, parents, class teachers, dormitory educators, and health professionals (specialists, dietitians, psychologists, physiotherapists). In addition to the transfer of factual knowledge, prevention programs should focus on personality development and conflict management techniques. Instead of frontal lectures, it is recommended to use small group and cooperative techniques, drama pedagogical tools, experiential and self-knowledge tasks. To do this, we recommend creating mixed groups (even between genres). For this purpose, we recommend creating mixed groups (even between genres). The content of intervention programs must be communicated to students by all participants and put into practice in dance teaching in the long run. This is because creating and maintaining a positive body image requires constant work and feedback, mainly through activities where the individual can connect with others, perform the task for the pleasure of the activity, and feel their power (Gattario & Friséen, 2019).

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