

Prevalence of Eating Disorders And Menstrual Irregularities Among Female Football Players

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Abstract

Purpose: In the present study the occurrence of eating disorders (EDs) and menstrual dysfunctions (MDs) was examined among physically inactive women (C) and elite female football players (FP).

Methods: ED was investigated by EDI and SCOFF-test. MD was measured by questions on menstrual history.

Results: Although there were a few participants in both groups who reached the cut-off scores in 'Drive for Thinness' and 'Body Dissatisfaction' subscales of EDI, there were no significant differences between the rates. None of the participants passed the critical limit in the 'Bulimia' subscale. There was no significant difference between the average scores of the first three subscales of EDI in the two groups. The next five subscales of EDI measure psychopathology commonly associated with, but not unique to, ED. We could observe significant difference only between the average score of 'Interpersonal Distrust' subscale. Depending on the SCOFF-test we could not observe any significant difference between the incidences of EDs in the groups. In the FP group the age of menarche was significantly older. Less FPs had oligomenorrhea, but there was no significant difference between the rates of secondary amenorrhea. The common incidence of EDs and MDs was the same in both groups.

Conclusions: Our results suggest that the prevalence of EDs was similar in the investigated groups, only the feeling of 'Interpersonal Distrust' was stronger among female football players. Physically inactive women are more endangered by oligomenorrhea. There is no significant difference between the common incidences of EDs and MDs among the groups.

Keywords

eating disorder, menstrual dysfunction, female football

Introduction

Numerous publications suggest the connection between eating disorders (EDs) and sport (Johnson et al., 1999; Sundgot-Borgen & Torstveit, 2005). Disordered eating can be seen in athletes participating in all sports. Sports that may place athletes at higher risk for the development of EDs include those in which leanness is emphasized (eg, gymnastics, ballet dancing, diving, and figure skating) or perceived to optimize performance (eg, long-distance running and cross-country skiing) and those that use weight classification (eg, martial arts and rowing) (Johnson, 1994). Risk factors of EDs include frequent weight cycling, early sport-specific training, psychological factors (eg, poor coping skills, unhealthy family dynamics, and low self-esteem) and personality traits (eg, perfectionism, compulsiveness, and high achievement expectations), pressure to optimize performance or meet inappropriate weight or body fat goals, social factors (eg, idealization of thinness) or a sudden increase in training volume (Johnson, 1994). Disordered eating behaviours may impair athletic performance and increase risk of injury. The prevalence of EDs has been reported to be higher in young female athletes than in nonathletes (Benson et al., 1985; Loosli et al., 1986). EDs can result not only in menstrual dysfunction (MD) but also in psychological and other medical complications, including potentially irreversible bone loss, depression, fluid and electrolyte imbalance, and changes in the cardiovascular, endocrine, gastrointestinal, and thermoregulatory systems. Some of these complications are potentially fatal (Palla & Litt, 1988).

It has been reported that menstrual irregularities are more prevalent in the athletic population than in the general female population (Otis, 1992). A number of factors, such as energy balance, EDs, exercise intensity and training practices, body weight and body composition, and physical and emotional stress may contribute to the development of athletic menstrual dysfunction (Cannavo et al., 2001; Sundgot-Borgen & Torstveit, 2007).

In the present study our purpose was to investigate the prevalence of EDs and MDs and their common occurrence among female football players.

Methods

Participants

The subjects consisted of 130 women in two groups. The group of elite female football players (FP) included footballers from the 1st and 2nd league of the Hungarian National Championship [n=65]. The average age of FP group was 23.27±5.13 years. They had been certified players averagely for 7.85 years. They had at least 4 trainings and 1 match per week. The control group contained physically inactive women (C) who did not do any regular physical activity [n=65]. They were selected from the undergraduates of University of Szeged, Hungary. Their average age was 22.11±2.04 years.

Questionnaires

The possible occurrence of EDs was investigated by Eating Disorder Inventory (EDI) (Garner, 1983) and SCOFF (Morgat, 1999) questionnaires.

The EDI is a 64 item, self-report, multiscale measure designed for the assessment of psychological and behavioural traits common in anorexia nervosa and bulimia. The EDI consists of eight subscales measuring: 1) Drive for Thinness, 2) Bulimia, 3) Body Dissatisfaction, 4) Ineffectiveness, 5) Perfectionism, 6) Interpersonal Distrust, 7) Interoceptive Awareness and 8) Maturity Fears. The first three subscales of EDI are capable to detect EDs, the cut-off scores of 'Drive for Thinness' and 'Bulimia' subscales were ≥ 14 points and ≥ 21 points for 'Body Dissatisfaction'. The next five subscales, without critical limits, measure psychopathology commonly associated with, but not unique to, EDs (Garner, 1983). The Hungarian version of EDI was translated and validated by Túry et al (1997).

The SCOFF-test is a highly effective screening instrument for detecting eating disorders including five simple yes-no questions:

- Do you make yourself **S**ick because you feel uncomfortably full?
- Do you worry you have lost **C**ontrol over how much you eat?
- Have you recently lost more than **O**ne stone in a 3 month period?

- Do you believe yourself to be **F**at when others say you are too thin?
- Would you say that **F**ood dominates your life?

The evaluation of SCOFF-test is one point for every “yes” and a score of ≥ 2 indicates a likely case of anorexia nervosa or bulimia (Morgat, 1999). The Hungarian version of SCOFF-test was translated and validated by Babusa (2013).

MD was measured by questions on menstrual history. We investigated the age of the first menstruation (menarche), primary amenorrhea which is defined as the absence of menses by age 16 years, secondary amenorrhea which is typically defined as the absence of menses at least 3 consecutive menstrual cycles in a female who has begun menstruating. Oligomenorrhea refers to menstrual periods that occur at intervals longer than every 35 days (Loucks & Horvath, 1985; Loucks, 1990).

Statistical analysis

Statistical analysis of ED or MD prevalence was performed by the Bonferroni-test and data were reported as %. Statistical analysis of EDI subscales' average points and menarche ages was performed by the Mann-Whitney U-test and data were reported as means \pm S.E.M. In both cases probability level of $p^* < 0.05$ was accepted as a significant difference vs. control values.

Results

The prevalence of EDs depending on the first three subscales of EDI and SCOFF-test is demonstrated in Table 1. Although there were a few participants in both groups who reached the cut-off scores in 'Drive for Thinness' (C: 4.61%; FP: 6.15%) and 'Body Dissatisfaction' (C: 3.08%; FP: 4.61%) subscales, there were no significant differences between the rates of incidence. None of the participants of both groups reached the cut-off score in the 'Bulimia' subscale. Depending on the SCOFF-test we could not observe any significant difference between the incidence of EDs in the groups (C: 16.92%; FP: 12.31%).

Table 1. Prevalence of EDs depending on EDI subscales and SCOFF-test

	Control group (n=65)	Female football players (n=65)
'Drive for Thin- ness' subscale of EDI (cut-off score \geq 14points)	6.15 %	4.61 %
'Bulimia' subscale of EDI (cut-off score \geq 14points)	0.00 %	0.00 %
' Body Dissatisfac- tion' subscale of EDI (cut-off score \geq 14points)	3.07 %	4.61 %
SCOFF-test	16.92 %	12.31 %

The average scores of EDI subscales illustrates the participant's tendency for EDs and psychopathology commonly associated with, but not unique to, EDs (Table 2).

There was no significant difference between the average scores of 'Drive for Thinness' (C: 4.36 ± 0.6 ; FP: 3.42 ± 0.47), 'Bulimia' (C: 1.25 ± 0.27 ; FP: 1.29 ± 0.26) and 'Body Dissatisfaction' (C: 6.86 ± 0.77 ; FP: 7.15 ± 0.76) in the two groups. We could observe significant difference only between the average score of 'Interpersonal Distrust' (C: 2.4 ± 0.39 ; FP: $3.75 \pm 0.46^*$).

Table 2. Average points of EDI subscales

EDI subscales	Control group (n=65)	Female football players (n=65)
Drive for Thinness	4.36±0.6	3.42±0.47
Bulimia	1.25±0.27	1.29±0.26
Body Dissatisfac- tion	6.86±0.77	7.15±0.76
Ineffectiveness	3.67±0.51	3.49±0.4
Interpersonal Distrust	2.4±0.39	3.75±0.48*
Interoceptive Awareness	3.32±0.44	3.47±0.48
Perfectionism	5.51±0.58	5.9±0.48
Maturity Fears	5.12±0.52	6.4±0.5

Measuring menstrual history (Table 3) all the participants underwent their first menses before the age of 16, so we could not detect primary amenorrhea in the investigated groups. But in the FP group the menarche age was significantly older (C: 12.9±0.17 years; FP: 13.81±0.2*). Significantly less FPs had oligomenorrhea (C: 36.92%; FP: 13.85%*), but there was no difference between the rate of secondary amenorrhea (C: 10.77%; FP: 3.08%).

Table 3. Menstrual history and rate of menstrual irregularities

	Control group (n=65)	Female football players (n=65)
Age of menarche	12.9±0.17 years	13.81±0.2 years*
Primary amenorrhea	0.00 %	0.00 %
Secondary amenorrhea	10.77 %	3.08 %
Oligomenorrhea	36.92 %	13.85 %*

The common incidence of any kind of EDs and MDs together was the same in both groups (C: 7.69%; FP: 7.69 %).

Discussion

The prevalence of EDs detected by SCOFF-test was higher in both groups than observed by EDI. This can be explained by the simplicity of SCOFF-test which contains fewer questions and does not use 6-point Likert-scale.

A number of studies have reported a higher frequency of EDs in athletes competing in leanness or low body weight emphasizing sports (Hausenblas & Carron, 1999; Holm-Denoma et al., 2009). In contrast, our results suggest the same conclusion that some studies on high-school athletes report no greater risk for the development of an ED than controls (Fulkerson et al., 1999; Smolak et al., 2000; Rosendahl et al., 2009). In our study we observed that the feeling of ‘Interpersonal Distrust’ as a psychopathology commonly associated with EDs was significantly stronger in the FP group. The explanation of this phenomenon needs further psychological investigations.

Our results are in contrast to the data suggesting that menstrual irregularities are more prevalent in the athletic population than in the general female population (Otis, 1992). We observed similar prevalence of primary and secondary amenorrhea, moreover oligomenorrhea was more prevalent in the C group. This contradiction is due to methodological differences among the studies.

Our study reveals that the menarche age of FPs is significantly older, and this result matches to data of numerous publications (Fujii & Demura, 2003; Malina, 1983; Stager & Hatler, 1988).

There is hardly any publication in the relevant literature which is concerned with the specific topic of ED and MD among female football players. Sundgot-Borgen & Torstveit (2007) detected a significantly lower percentage of football players compared to handball and endurance athletes and control women reported EDs. In contrast, we could not observe significant difference between the FP and C groups. In Sundgot-Borgen & Torstveit's study (2007) a similar percentage of footballers (9.3%) and controls (15.2%) reported current menstrual dysfunction. In contrast, we detected significantly lower prevalence of oligomenorrhea in the FP group than among physically inactive women.

The differences in ED and MD prevalence between different studies can be attributed to different methodological issues, such as different sports, different competitive level, different screening methods, different periods (on-off-season), and different age groups.

Conclusion

Although EDs and MDs are less common among female football players than in many other sports, it is important to be aware of the problem as EDs in female athletes can easily be missed. Therefore, individuals, who are involved in competitive football, including the players themselves, coaches, administrators and family members, should be educated about these problems and strategies

should be developed to prevent, recognise and treat EDs and MDs, which may impair athletic performance and increase risk of injury.

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