Dietary habits and physical self-concept of elite rhythmic gymnasts

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Summary

Study aim: To identify main differences in nutrient patterns, food preferences and physical self-concept between the world's elite rhythmic gymnasts and untrained controls.

Material and methods: A group of elite rhythmic gymnasts (n = 103) aged 15 – 21 years volunteered to participate in the study during the 2003 World Championships in Rhythmic Gymnastics (Budapest, Hungary). A selected group of 113 untrained schoolgirls aged 15 – 18 years served as controls. Typical eating habits and physical self-concept were assessed by applying a questionnaire containing questions on dietary habits and on self-concept (taken from the Tennessee Self-Concept Scale).

Results: The female gymnasts had significantly lower (p<0.01) body mass and BMI than their untrained mates. The levels of physical self-concept were similar in both groups. Rhythmic gymnasts declared eating lunch and dinner, as well as eating sweets, eating excessively and liking eating, less frequently than their untrained mates (p<0.01).

Conclusion: Attaining a perfect body by elite gymnasts may mean a very high cost associated with poor dietary habits and inadequate nutrient intake.

Key words: Physical self-concept – Elite athletes – Rhythmic gymnastics – Dietary habits

Introduction

Rhythmic gymnastics was established as an autonomous sport in 1962 by the International Gymnastic Federation (FIG). The essentials of rhythmic gymnastics are aesthetic and technical perfection together with the beauty of movements. Consequently, rhythmic gymnastics call attention to attractiveness of the body presentation, harmony of aesthetic movements as well as technical performance. All these foundations for successful career in rhythmic gymnastics routinely develop in very early age [2]. The top rhythmic gymnasts are between 14 and 17 years of age.

The prevalence of excessive training loads and the overemphasis on thinness is increasing in all aesthetically shaped sports. In particular, female athletes may be at risk of developing poor body self-esteem, inappropriate dietary habits and eating disorders and, in consequence, illnesses and health problems [3-7]. The aim of this study was thus to assess dietary habits and physical self-concept of elite rhythmic female gymnasts vs. the untrained schoolgirls.

Material and Methods

Elite rhythmic gymnasts from 19 countries (n = 103) aged 15 – 21 years, competing at the World Championships in Rhythmic Gymnastics held in 2003 in Budapest, volunteered to participate in the study authorised by the International Federation of Gymnastics (FIG). The gymnasts were interviewed after their final performances. A group of Hungarian adolescent females (n = 113) aged 15 – 18 years were recruited from non-sport forms of a secondary school in Budapest. All subjects were requested to fill questionnaires after their body height, body mass and body mass index (BMI) were recorded together with the desired body mass.

The questionnaire contained 6 questions pertaining to nutritional and dietary habits and 18 questions from the Physical Self-Concept subscale of the Tennessee Self-Concept Scale [1]. The answers to all questions were based on the 5-point Likert's scale, the Cronbach's alpha being equal to 0.78. It took about 15 min to complete the questionnaire.

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Questionnaire data pertaining to dietary habits were subjected to one-way MANOVA followed by post-hoc t test. Body mass self-ratings were assessed by applying the chi-square function. The level of $p \leq 0.05$ was considered significant.

Results

Mean values (±SD) of somatic and questionnaire variables recorded in gymnasts and in control subjects are presented in Table 1. As expected, the elite rhythmic gymnasts had significantly ($p < 0.01$) lower body mass and BMI than their untrained mates of similar age. Thirty-five percent of rhythmic gymnasts wished their body mass be lower, 57% of them considered it appropriate and only 8% wished to have higher body mass. In contrast, 55% of control schoolgirls wished their body mass be lower, 24.8 % considered it appropriate and 23.9% wished to have higher body mass. The two groups of girls differed significantly ($p < 0.01$) in all those percentages.

Table 1. Mean values (±SD) of somatic and questionnaire variables recorded in elite rhythmic gymnasts (RG) and control female adolescents (C) aged 15 – 21 years

Variable	RG (n = 103)	C (n = 113)
Age (years)	17.2 ± 1.8**	16.2 ± 1.0
Body height (cm)	167.0 ± 5.5	168.3 ± 6.5
Body mass (kg)	46.7 ± 4.4**	55.4 ± 8.0
Desired body mass (kg)	46.2 ± 4.2**	54.1 ± 6.2
BMI	16.7 ± 1.2**	19.5 ± 2.4
How often eats (scale 1 – 5):		
Breakfast	3.4 ± 0.8	3.5 ± 1.3
Lunch	3.1 ± 0.8**	4.3 ± 1.1
Dinner	2.8 ± 0.9**	4.3 ± 1.2
How true (scale 1 – 5):		
Eats sweets	2.2 ± 0.8**	3.5 ± 1.4
Eats excessively	1.9 ± 1.0**	2.4 ± 1.2
Likes eating	3.2 ± 0.7**	4.5 ± 0.8
Physical S-C (scale 1 –5)	3.5 ± 0.5	3.5 ± 0.6

Legend: S-C – Self-Concept; ** significantly ($p < 0.01$) different from the Control group (by t test)

Rhythmic gymnasts declared eating lunch and dinner, as well as eating sweets, eating excessively and liking eating, less frequently than their untrained mates ($p < 0.01$). No significant between-group difference was, however, found with respect to the frequency of eating breakfast and to the degree of body self-esteem and physical self-concept (Table 1).

Discussion

The elite rhythmic gymnasts differed considerably from their untrained mates in their self-ratings of body mass which was not surprising, considering the difference in the mean actual body mass (46.7 ± 4.4 and 55.4 ± 8.0 kg, respectively). In spite of that, both groups of adolescent females exhibited similar levels of physical self-concept.

The two groups differed also in their dietary habits. The frequencies of having breakfast were in both groups alike, yet elite athletes tended to have lunch and dinner less often than their untrained mates. The gymnasts were also less likely to eat sweets, did not overeat as often as the control schoolgirls and less enjoyed eating than their peers. It could thus be concluded that the body shape of young female elite athletes matching, to a high degree, their expectations, was attained at the cost of poor and unhealthy eating habits and very strict and potentially unfavourable nutritional regimens. The presented findings emphasise the importance of appropriate dietary counselling for adolescent athletes in order to prevent possible health problems like anorexia nervosa, growth retardation, osteoporosis, etc. [8].

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