

Quality of life and level of perfectionism of rhythmic gymnastics athletes

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Abstract - Aim The objective of the research was to evaluate the quality of life of Rhythmic Gymnastics athletes. **Methods:** The study was a quantitative approach, observational, cross-sectional and analytical. The sample consisted of 36 athletes from Paraná in the juvenile and adult categories. Data collection took place via Google Forms, using the following instruments: Sociodemographic Questionnaire; Athlete Quality of Life Questionnaire and Sports Multi-dimensional Perfectionism Scale-2 (SMPS-2). Statistical analysis was performed using SPSS software version 21. To verify the correlation between the scores of the questionnaires, Pearson's correlation was used. **Results:** The results obtained showed that, in the questionnaire, the item that had the greatest influence on the athletes' quality of life was the social relationship in the sports environment. Regarding the level of perfectionism, the score was similar between the categories, with the Organization/Personal Standards domain obtaining the highest score. There was a significant correlation between quality of life and perfectionism in sport, in the adult category ($r = 0.7021$; $p = 0.007$). **Conclusion:** The pressure exerted on the athletes, as well as the personal demands, directly interfere in the quality of life of gymnasts. In this way, psychological and support, family and technical support, balance between training and rest are fundamental for the promotion of health and quality of life for athletes.

Keywords: gymnastics, quality of life, sport psychology, perfectionism.

Introduction

Rhythmic gymnastics is as a complex artistic and aesthetic sport with a particular training process and which demands high levels of physical and psychological stress in competition¹. It was in this context that rhythmic gymnastics emerged, a modality whose characteristics are beauty, enchantment and elegance, through movements that require body awareness and the search for perfectionism. In tune, the equipment is handled (rope, bow, clubs, ball and tape) associated with musical accompaniment²⁻⁴.

The rhythmic gymnastics was started with the purpose of valuing the female figure. The modality combines sport with art, using flexibility and body expression skills, surprising the audience⁵. Because it is a high-performance sport, it is necessary for athletes to have a disciplined routine, with adequate nutrition, regular training and correct rest, demanding the maximum from the individual, since rhythmic gymnastics requires both artistic and technical movement skills^{6,7}.

The emotional benefits of physical activity and sport for the athlete are evident, such as: reduction of anxiety and stress, with the release of endorphins that generate a sensation of pleasure and well-being in the individual; decrease in depression; improvement of self-image and

self-esteem; increased vigor; improved mood and ability to deal with psychosocial stressors^{8,9}. However, observing the circumstances to which gymnasts are submitted to succeed in the modality, it is evident that physical and psychological aspects are affected with practice, due to excessive physical effort and the search for emotional self-control. Thus, several factors can motivate, as well as stress athletes^{10,11}.

In this context, psychological aspects, such as anxiety, are part of the daily life of the athletes, involve several variables in the sports environment and, depending on the situation, can have a positive or negative impact on performance, generating different reactions and consequences^{8,12,13}. Another extremely important factor is food. Due to the sport's demand for a lean and elongated body pattern, it is necessary to control weight and food, in the search for the desired body aesthetics, which is another fundamental point for gymnasts, aiming to perform exuberant movements and with maximum perfectionism. technician¹⁴.

In addition, according to the National Health Promotion Policy, the autonomy and uniqueness of subjects must be considered, since the ways in which they choose their

ways of living, how they organize their choices and create possibilities for satisfy needs, depend not only on the will, but are conditioned and determined by the context in which they live¹⁵. Therefore, the context and conditions to which the subject is exposed must be evaluated, analyzing whether the practice is actually promoting the individual's health under the circumstances¹¹ and whether or not the context favors their quality of life.

Actions that encompass interdisciplinarity in the process are essential to promote quality of life and well-being, both psychologically and socially, in athletes¹⁶. Nutritional guidelines and psychological assessments are recommended for athletes in order to prevent possible diseases¹⁷.

The health-illness process stems from multiple factors, and it is up to the health sector to make them increasingly visible. The National Health Promotion Policy proposes that health interventions expand their scope, taking as their object health problems and needs and their determinants and conditioning, focusing on living conditions and favoring the expansion of healthy choices¹⁵.

In view of the above, there is a need for studies that address this analysis of the determinants and conditions of the health of athletes, including psychological and behavioral factors of everyday life that involve high-level athletes, identifying and analyzing the associations of these factors and their influence on quality of life. In this way, the present study aims to evaluate the quality of life of athletes of rhythmic gymnastics, in addition to evaluating the level of perfectionism of the athletes.

Methods

Study design

This is a study with a quantitative approach, observational and cross-sectional. The study was designed in accordance with the Resolution 466/12 of the National Health Council, and was approved by the local Human Research Ethics Committee (Number 4.951.784).

Participants

The participants consisted of 36 rhythmic gymnastics athletes from Paraná, with 23 athletes from the youth category (13 to 15 years old) and 13 adult athletes (16 years old or more), members of group or individual series, with the contact being carried out through the Paraná Gymnastics Federation, in which these athletes are linked. This classification according to age, in youth and adult categories, was in accordance with the Brazilian Gymnastics Confederation. First, the Paraná Federation of Gymnastics was contacted, so that it could authorize the conduction of the research with the athletes and, later, the athletes and parents were explained how the training would be carried out. Participants signed remotely an informed consent form approved by the Committee of

Ethics (by guardians or athletes over 18 years old), as well as the Term of Assent, for minor athletes, between 12-18 years old. All information was previously clarified.

As a criterion for inclusion in the study, gymnasts were asked to be linked to Paraná Federation of Gymnastics and to be in the juvenile or adult category. As an exclusion criterion, it was verified whether the gymnast answered all the questionnaires in their entirety, as well as the correct signature of the forms.

Data collection

First, the Paraná Federation of Gymnastics (FPRG) was contacted remotely, so that it could authorize the conduction of the research with the athletes and, later, the athletes and parents were explained how the training would be carried out. The data collection, as well as the presentation and explanation of the questionnaires used, also remotely.

Data collection was done electronically via Google Forms, using computers or cell phones for access. The link to access Google Forms was made available when the survey was explained to athletes and parents and/or guardians, and was available for 15 days. A sociodemographic questionnaire was used for characterization, with questions about age, height and weight (described by the athletes), time of practice of the modality, time as a member of the competition team and amount of weekly training and its duration. The questionnaire on quality of life was also applied, validated by Cunha¹⁸, which has 14 questions divided into five factors that influence the life quality of athletes in relation to the training and competition environment.

In addition, the Sports Multidimensional Perfectionism Scale-2 (SMPS-2), validated by do Nascimento¹⁹, which assesses the level of perfectionism of gymnasts was applied. The questionnaire has 24 items, divided into: Organization/Personal Standards; Concern about Errors; Perceived Parental Pressure and Doubts in Action. Responses are given on a five-point Likert-type scale, ranging from "strongly disagree" to "strongly agree" with the item in question.

Statistical analysis

The analyzes were performed using the SPSS software, version 21, and the graphs were generated in the GraphPad Prism software, version 9. The reliability of the applied questionnaires was verified based on Cronbach's alpha. The Kolmogorov-Smirnov normality test was used to verify whether the data had a normal distribution. The T test of unpaired samples was used to compare the scores between the categories and the chi-square test for relate the frequency of each category. Finally, to verify the correlation between the scores of the questionnaires, Pearson's correlation was used, with a significance level of $p < 0.05$.

Results

The results of the different questionnaires applied will be shown below. The assessment of the reliability of the questionnaires, using Cronbach's alpha test, showed that they are all reliable, as they presented a coherent pattern of responses and values greater than 0.7 (0.826 for the quality of life questionnaire and 0.843 for the perfectionism questionnaire).

Sociodemographic data

According to [Table 1](#), regarding the socio-demographic data in the adult category, the average age of the gymnasts was 17 years old, the average weight was

Table 1 - Sociodemographic description of the adult category in the rhythmic gymnastics modality.

	Minimum	Maximum	Average	Standard deviation	Coefficient of variation (%)
age	15	19	17	1.4	8.24
weight	48.0	68.0	57.9	5.9	10.19
height	1.55	1.78	1.66	0.07	4.22
			no		%
Marital status					
Married or stable union			1		7.7
Single			12		92.3
Education					
Complete primary education			1		7.7
Incomplete high school			7		53.8
Complete high school			1		7.7
Incomplete higher education			4		30.8
Time as a member of the competition team					
From 6 months to 1 year			1		7.7
3 years			1		7.7
4 years or more			11		84.6
Time spent practicing Rhythmic Gymnastics					
From 3-5 years			1		7.7
From 5-10 years			5		38.5
More than 10 years			7		53.8
Number of workouts					
3 times a week			two		15.4
5 times a week			6		46.2
6 times a week			4		30.8
Every day			1		7.7
Duration of training					
3 h/day			1		7.7
4 h/day			two		15.4
5 h/day			6		46.2
6 h/day			two		15.4
7 h/day			two		15.4

57.9 kg and the average height was 1.66 m. Considering marital status, 92.3% are single. [Table 2](#) shows the socio-demographic data in the juvenile category, with an average age of 14 years, an average weight of 50.7 kg and an average height of 1.62 m. As for education in the adult category, most have incomplete high school (53.8%), while in the youth category, most athletes have incomplete elementary school (60.9%).

Table 2 - Sociodemographic description of the youth category in the rhythmic gymnastics modality.

	Minimum	Maximum	Average	Standard deviation	Coefficient of variation (%)
Age	13	16	14	0.9	6.43
Weight	35.2	70.7	50.7	8.3	16.37
Height	1.47	1.83	1.62	0.08	4.94
			no		%
Marital status					
Single			23		100
Education					
Incomplete elementary school			14		60.9
Complete primary education			3		13
Incomplete high school			6		26.1
Time as a member of the competition team					
Less than 6 months			2		8.7
From 6 months to 1 year			1		4.3
1 year			1		4.3
2 years			4		17.4
3 years			3		13
4 years or more			12		52.2
Time spent practicing Rhythmic Gymnastics					
Up to 3 years			5		21.7
From 3-5 years			7		30.4
From 5-10 years			11		47.8
Number of workouts					
2 times a week			5		21.7
3 times a week			6		26.1
4 times a week			4		17.4
5 times a week			6		26.1
6 times a week			2		8.7
Duration of training					
1 h/day			1		4.3
2 h/day			4		17.4
3 h/day			5		21.7
4 h/day			7		30.4
5 h/day			4		17.4
6 h/day			1		4.3
8 h/day or more			1		4.3

Considering the time of practice of the rhythmic gymnastics modality, as observed in Table 1, in the adult category, 53.8% of the athletes have been practicing for more than 10 years, 38.5% have been practicing for 5-10 years and 7.7 % of 3-5 years. Related to time as a member of the competition team, 84.6% (11) of the gymnasts have been on the team for 4 years or more, 7.7% (1) have been on the team for 3 years and 7.7% (1) have been a member of the team. team 6 months-1 year ago. As for the youth category, in Table 2, in relation to the time of practice of the modality, 47.8% of the athletes have practiced for 5-10 years, 30.4% have practiced the modality for 3-5 years and 21.7% indicate that practice the modality for up to 3 years. With regard to participation in the competition team, 52.2% said they had been on the team for 4 years or more, 17.4% reported being on the team for 2 years, 13% for 3 years and 8.7% for less than 6 months.

Regarding training frequency, in the adult category (Table 1), 46.2% (6) of gymnasts train five times a week, 30.8% (4) train six times a week, 15.4% (2) train three times a week and 7.7% (1) reported training every day of the week. Regarding the hours of training per day, 46.2% (6) reported training 5 h/day, 15.4% (2) training 7 h/day, 15.4% (2) reported training 6 h/day, 15.4% (2) train 4 h/day and 7.7% (1) train only 3 h/day. While in the juvenile category (Table 2), when asked about the frequency of weekly training, 26.1% (6) indicated that they train five times a week, another 26.1% (6) train three times a week, 21, 7% (5) said they train 2 times a week only, while 17.4% (4) train up to 4 times a week and 8.7% (2) train up to six times a week.

Quality of life questionnaire of the athletes

Tables 3 and 4 show the results of the quality of life questionnaire of the athletes applied in the adult and juvenile categories. In the general analysis, participants in the

Table 3 - Results of the athletes' quality of life questionnaire applied in the adult category.

Questionnaire applied - ADULT	Minimum	Maximum	Average	Standard deviation
Quality of life of athletes	25	43	33.4	6.37
Athlete's emotional state	1.5	4.0	2.7	0.69
Basic conditions for health	1.3	3.3	2.5	0.60
Social relationships in the sports environment	2.0	4.0	2.9	0.63
Planning and periodization of sports training	0.0	2.5	1.5	0.88
Signs and symptoms of overtraining	0.8	3.8	2.2	0.91

Table 4 - Results of the athletes' quality of life questionnaire applied in the youth category.

Questionnaire applied - YOUTH	Minimum	Maximum	Average	Standard deviation
Quality of life of athletes	18	56	31.8	9.24
Athlete's emotional state	0.5	4.0	2.7	0.98
Basic conditions for health	1.0	4.0	2.3	0.91
Social relationships in the sports environment	1.0	4.0	2.9	0.74
Planning and periodization of sports training	0.0	4.0	1.4	1.08
Signs and symptoms of overtraining	0.5	4.0	2.0	0.95

adult category had mean scores of 33.4 ± 6.37 . When analyzing the domains of the questionnaire, the mean scores ranged from 1.5 ± 0.88 for planning and periodization of sports training to 2.9 ± 0.63 for Social Relationships in the Sports Environment. However, in the juvenile category, in the general analysis, they presented mean scores of 31.8 ± 9.24 . When analyzing the domains of the questionnaire, the mean scores ranged from 1.4 ± 1.08 for planning and periodization of sports training to 2.9 ± 0.74 for social relationships in the sports environment.

Among the items present in the questionnaire, the one with the highest score, showing a greater influence on quality of life, was social relationships in the sports environment (average of 2.9), followed by the emotional state of the athlete (average of 2.7). According to the answers in the adult category, the relationship with peers factor interferes a lot in the quality of life of the athletes, with 76.91% of the adult athletes reporting a lot or total influence and 65.22% of the juvenile category reported having a lot of influence or total influence on quality of life. In addition, sleep quality factors (60.87%) and excessive nervousness during competition (69.57%) were also reported by athletes with a great or total influence on quality of life.

Comparing the two categories, it was noted that there was no significant difference ($p = 0.593$), that is, the quality of life of the two groups is similar. When compared to the score between the two categories in relation to the subdivisions of the test: emotional state of the athletes ($p = 0.782$); basic health conditions ($p = 0.436$); social relationship in the sports environment ($p = 0.859$); planning and periodization of sports training ($p = 0.939$) and signs and symptoms of overtraining ($p = 0.503$), it was observed that there were no significant differences in all subdivisions, that is, the score on the scale is similar between adults and juveniles. This similarity between the

categories may have occurred because they have similar requirements.

Multidimensional Perfectionism in Sports Scale-2 (SMPS-2)

Tables 5 and 6 show the results of the multidimensional perfectionism scale in sport-2 applied to the adult and youth categories. In the general analysis, participants in the adult category had mean scores of 68.5 ± 13.36 . When analyzing the domains of the questionnaire, the mean scores ranged from 2.2 ± 0.64 for perceived parental pressure to 3.3 ± 0.92 and 3.3 ± 0.91 for organization/personal patterns and concern about errors, respectively. However, in the juvenile category, in the general analysis, they presented mean scores of 65.5 ± 10.69 . When analyzing the domains of the questionnaire, the mean scores ranged from 2.1 ± 0.64 for perceived parental pressure to 3.2 ± 0.61 for the organization/personal standards, corresponding to the data found in the category adult in this research.

In the Sports Multidimensional Perfectionism Scale -2 (SMPS-2), there was no significant difference ($p = 0.462$), that is, the score on the scale is similar between the adult and juvenile categories. On the comparison of the scores between the categories with respect to subdivisions organization/personal standards (OPP) ($p = 0.520$); concern about errors (PE) ($p = 0.462$); perceived parental pressure (PPP) ($p = 0.675$) and doubts in action (DA) ($p = 0.905$), it was found that, in all subdivisions, there was no significant difference between the categories, with the score on the scale being similar between the adult and youth athletes.

In addition, regarding the adult category, 61.53% athletes agreed or strongly agreed that they have and follow a pre-competition routine. However, 46.15% reported agreeing or strongly agreeing that if they do not do well whenever they are competing, they feel that people do not respect them as an athlete. On the other hand, 61.53% of the athletes in the adult category and 69.57% in the youth category responded that they agree or strongly agree that

Table 5 - Results of the sport-2 multidimensional perfectionism scale applied in the adult category.

Questionnaire applied - ADULT	Minimum	Maximum	Average	Standard deviation
Sport-2 Multidimensional Perfectionism Scale (SMPS-2)	41	89	68.5	13.36
Organization/personal standards	1.7	5.0	3.3	0.92
Concern about errors	1.8	4.5	3.3	0.91
Perceived parental pressure	1.0	3.4	2.2	0.64
Doubts in action	1.3	4.8	3.1	0.98

Table 6 - Results of the sport-2 multidimensional perfectionism scale applied to the youth category.

Questionnaire applied - YOUTH	Minimum	Maximum	Average	Standard deviation
Sport-2 Multidimensional Perfectionism Scale (SMPS-2)	46	93	65.5	10.69
Organization/personal standards	2.0	4.6	3.2	0.61
Concern about errors	1.8	4.3	3.0	0.80
Perceived parental pressure	1.1	3.4	2.1	0.64
Doubts in action	2.0	4.8	3.0	0.69

they develop plans that determine how they want to perform during the competition. On the other hand, in the juvenile category specifically, 60.87% said they agree or strongly agree that if a teammate or opponent (in the same category) performs better during the competition, she feels she has failed in some way.

When the correlation between the quality of life score and sports perfectionism in the adult category was performed, it was observed that there was a significant correlation between quality of life and sports perfectionism. That is, whoever scores higher in one also scores in the other ($r = 0.7021$; $p = 0.007$). However, in the juvenile category, no significant correlation was observed.

Discussion

It is known that the practice time of rhythmic gymnastics athletes is long, as well as the workload and the amount of weekly training are intense, seeking the best performance of the athlete. This can be confirmed in the present study and verified in other researches such as Del Vecchio et al.²⁰, which involved 33 rhythmic gymnastics athletes, the youth category claimed to have practiced the modality for $6, 43 \pm 2.41$ years and the adult category has been practicing for 10 ± 3.37 years. As for the time of training sessions, in the same study, they found that the juvenile has 5.07 ± 1.07 training sessions per week, lasting between 2 and 4 h in 43% of the responses and 57% for more than 4 h. In the adult category, the average was 4.71 ± 0.76 training sessions and, regarding their duration, 85% of the athletes train between 2 and 4 h and 15% train more than 4 h.

Analyzing the quality of life of the athletes, the items social relationship in the sports environment and the emotional state of the athletes showed greater influence on quality of life. Approximate results were found in a survey carried out by da Rocha²¹, with 286 people basketball players. Regarding the domains of the questionnaire, the mean scores ranged from 3.6 ± 2.1 for emotional state to 9.6 ± 2.1 for social relationships.

In the study by Aizava et al.²², carried out with high-performance volleyball athletes, it was pointed out that the athletes had a “very good” quality of life in all domains, with functional capacity being the domain with greater prominence, with 93% of the athletes demonstrating “very good” quality of life, followed by social aspects (82.6%), limitation by emotional aspects (76.7%). However, the domain with the lowest prevalence of athletes with “very good” life quality was pain (61.6%). Corroborating the results found by Heinemann, Greguol and Oliveira²³, when analyzing the quality of life of basketball athletes, reported that both the Under-13 and Under-14 categories presented high values for the quality of life and its dimensions.

In the investigation by Moreira et al.²⁴, the results showed that female basketball master athletes had higher health-related quality of life scores in the physical domains: physical aspects; general health status; vitality and physical component. However, male athletes showed better perception in the mental domains: mental health and mental component. Also, athletes with normal weight showed significantly higher values when compared to obese in most domains of quality of life, since these studies used different questionnaires than the one used in the present study.

Regarding the level of perfectionism of the gymnasts, the presence of perfectionism and a significant correlation with quality of life was observed, in the case of the adult category. In a survey carried out by Fortes et al.²⁵, with 52 athletes from the athletics modality from clubs in the city of São Paulo-SP, to verify the influence of perfectionism on risk behaviors for eating disorders, it was mentioned that almost 40% of the sample showed a high trait for perfectionism.

In this way, it is observed that sport at a high performance level provides a more disciplined life, differentiated knowledge in relation to different cultures, personal maturation and as a differentiated education. However, it is important to emphasize the importance of sports psychology for psychological preparation, collaboration for the recognition and control of emotions in competitive situations at a high performance level²⁶.

Given the above, to promote health and obtain a better perception of quality of life, it is necessary for athletes to establish healthy habits in relation to sleep, adequate rest, personal relationships and their own spirituality²⁷.

Conclusions

In the present study, a significant correlation was observed between quality of life and perfectionism in sport in the adult category. This correlation can be understood in the sense that rhythmic gymnastics is an extremely aesthetic sport that seeks the perfection of movements. As a result, the pressure exerted by the tech-

nical team and family members on the athletes, as well as the personal demands, directly interfere with their well-being and health, which is directly related to the quality of life of the gymnasts. In this way, athletes do not measure efforts to achieve the standard imposed by the modality and in search of the best performance. However, psychological support, family and technical support, balance between training and rest, are fundamental for the promotion of health and quality of life for athletes.

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