

# Quality of life assessment for practitioners of an extreme conditioning program

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## ABSTRACT:

**Objective:** This study aims to evaluate the associations between quality of life and sociodemographic characteristics, motivation, and frequency and time of practice in practitioners of an extreme conditioning program. **Methods:** Observational descriptive-exploratory type research, with a convenience sample consisting of CrossFit® practitioners. The practitioners answered a demographic data questionnaire, and the WHOQOL-bref instrument was used to assess the quality of life. **Results:** Of the 260 practitioners evaluated, 59.61% were female. The highest means of QoL scores were for the physical domain (**79.8 ± 11.76**), **social domain (74.1 ± 15.59)**, **psychological domain (73.2 ± 13.67)**, and environment domain (70.7 ± 12.14). Practice time showed positive correlations with all QoL domains. **Conclusions:** The practitioners showed good results for quality of life, with the highest scores for the physical domain, followed by the social domain, the psychological domain, and finally, the environment domain. Longer practice time was correlated with higher averages for all QoL domains.

**Keywords:** Quality of life, Physical activity, Exercise, Surveys, Questionnaires.

## INTRODUCTION

Quality of life (QoL) is defined as the well-being derived from the assessment that the individual makes of different domains of life, being characterized as subjective, multidimensional, and changing over time<sup>1,2</sup>. Its assessment incorporates the perceptions of physical, psychological, and social well-being, considering the capacity to participate in activities of daily living and practical life, including physical activities, together with social and psychosocial functions<sup>1-4</sup>. The relationship between regular physical activity and the promotion of improvement in QoL has been widely studied in healthy and unhealthy adults, regardless of sex and age<sup>5,6</sup>.

The World Health Organization recommends that adults engage in 150 minutes of moderate-intensity physical activity per week, or at least 75 minutes per week of intense activity, with clear scientific evidence that, compared to inactive people, physically active people have better physical conditioning, lower risk profiles for several disabling conditions, and lower rates of non-transmissible chronic diseases<sup>4</sup>.

In recent years, there has been an increase in the number and type of activities in which high-intensity activity predominates. These include extreme conditioning programs (ECPs), such as CrossFit®, which are new forms of physical training characterized by performing constantly varied functional exercises at high intensity, with little or no rest<sup>7,8</sup>. The aim is to promote health by means of a program employing intense exercises that involve cardiovascular/respiratory resistance, energy, strength, flexibility, power, speed, coordination, agility, balance, and accuracy<sup>9</sup>.

The diversity of the training and the sense of community inherent to the practice of this modality creates bonds among practitioners and promotes mental well-being. Meanwhile, research related to ECPs focuses on the analysis of body composition, psychophysiological parameters, musculoskeletal injuries, aspects of life and health, and psychological behavior<sup>9</sup>.

Since studies have focused on the results of functional training in gyms, there remains a gap concerning the analysis of the effect of practicing this modality on QoL. ECPs represent an important strategy for improving QoL,

physical condition, and autonomy, especially in the elderly.

Therefore, this study aimed to evaluate the associations between QoL and sociodemographic characteristics, motivation, and frequency and time of practice in practitioners of an ECP.

## METHODS

This was an observational study of the descriptive-exploratory type, approved by the Research Ethics Committee of the institution. Participants who agreed to participate in the study signed a free and informed consent form and were reassured that they were free to withdraw from their participation at any time during the study. The researcher responsible for recruitment and administering the questionnaires was different from the researcher who analyzed the data, ensuring total secrecy.

The sample group was obtained by convenience and consisted of practitioners of an ECP (CrossFit®), of both sexes. To participate in the study, the volunteers were required to be at least 18 years old, practice the modality for at least a month, with a minimum training frequency of twice a week, and perform their practice in an affiliated CrossFit box. Failure to meet these criteria was considered a non-inclusion criterion, and non-response and/or lack of data in either of the questionnaires applied was also considered an exclusion criterion.

Two research instruments were used. A demographic data questionnaire consisted of questions concerning personal characteristics (gender, age, height, marital status, and education) and the practice of the modality [weekly frequency, time (months), and reasons for the practice]. To assess QoL, the WHOQOL-bref instrument was used, consisting of 26 questions, with two being general and the other 24 subdivided into Physical, Psychological, Social Relations, and Environment domains. The answers to the questions within each domain were given on a Likert-type scale, with higher scores being indicative of a better quality of life<sup>10</sup>. During the application, it was stressed that the entire questionnaire should be answered considering the last two weeks.

Initial data analysis employed descriptive statistics (mean  $\pm$  standard deviation, and absolute and relative frequency, for quantitative and qualitative variables, respectively). The Kolmogorov-Smirnov test was used to evaluate data normality. For inferential analysis, the Mann-Whitney and Spearman correlation tests were applied. The significance level adopted was  $p < 0.05$ . The software used for the analyses was IBM SPSS v. 22.

## RESULTS

Of the 260 practitioners assessed, 69.61% ( $n = 155$ ) were female. Ages ranged from 18 to 60 years, with a mean age of  $30.15 \pm 6.64$  years. The average body weight of the practitioners was  $72.31 \pm 13.86$  kg, the average height was  $1.69 \pm 0.09$  m, and the average body mass index was  $25.18 \pm 3.63$ . The duration of practice of the modality ranged from 1 to 132 months, with an average of  $21.85 \pm 19.34$  months. The average weekly practice frequency was  $4.51 \pm 1.14$ , with 36.15% of the sample practicing the modality five times per week, 21.53% three times, 17.69% four times, and 3.1% twice a week.

Regarding the marital status of the practitioners, 60.76% were single, 36.53% were married/lived with partners, and 2.71% were separated/divorced. In this sample, 38.84% had completed higher education, 25% had completed postgraduate education, 21.53% had higher education in progress, 6.53% postgraduate studies in progress, 5.73% had completed high school, and 2.7% had incomplete high school education.

Among the various reasons for practicing the modality indicated by the practitioners, the most frequent were "conditioning", "weight loss", and "hypertrophy", with "QoL" being the fifth most cited reason. The results regarding the characteristics of the participants are shown in Table 1.

For QoL, the highest average score was for the physical domain ( $79.8 \pm 11.76$ ), while the lowest average score was for the environment domain ( $70.7 \pm 12.14$ ).

For the inferential analysis, the reasons for the practice were grouped into physical factors (conditioning, weight loss, hypertrophy,

aesthetics, competition, strengthening, muscle definition, performance, and flexibility/mobility) and non-physical factors (health, quality of life, socialization, well-being, and leisure). Marital status was grouped into union (married/living with partners) and no union (single, separated/

divorced). Schooling was grouped into higher education (incomplete/complete/in progress) and basic education (incomplete/complete/in progress). The results are shown in Table 2.

## DISCUSSION

This work aimed to evaluate the associations between QoL and sociodemographic characteristics, motivation, and frequency and time of practice in practitioners of an ECP.

Among the various reasons given for ECP practice, the most frequent were “physical conditioning”, “weight loss”, and “hypertrophy”. Although “weight loss” and “hypertrophy” were among the factors most cited as reasons for practicing, about 65% of the practitioners reported that they accepted a lot, including their appearance.

Studies point to “aesthetics” as one of the main factors for practicing physical activity<sup>11,12</sup> In this study, the expression “quality of life” appeared in fifth place as a reason for practice, perhaps because of the way that this issue was presented<sup>13</sup>, or because QoL is not yet a term strongly associated with gym activities<sup>14</sup>. Nonetheless, QoL is a multidimensional and subjective construct, which makes its definition complex and is related to personal well-being, encompassing aspects such as health status, leisure, personal satisfaction, habits, and lifestyle<sup>13,15</sup>. Regular physical activity has been shown to provide several benefits for QoL in different age groups<sup>16–18</sup>

Overall, the results indicated good QoL levels among the practitioners in all domains, with the physical domain having the highest average. The benefits of CrossFit® include physical conditioning, which is fundamental for all other bodily needs, together with others such as stress reduction, increased lean body mass, high self-confidence, and muscle tone<sup>9</sup>, as well as improvements in cardiorespiratory conditions and body composition, since the technique demands several physical valences in a single training session<sup>9</sup>.

The practice of the modality provides benefits that are both physical and psychological. It was shown to increase flexibility and quality of life in general in women, with no difference according

**Table 1**

Sample characteristics.

	n	%
Reasons for the practice		
Conditioning	132	34.02
Weight loss	74	19.07
Hypertrophy	44	11.34
Health	38	9.8
Quality of life	22	5.67
Socialization	20	5.15
Aesthetics	12	3.09
Well-being	12	3.09
Competition	9	2.31
Muscle definition	9	2.31
Performance	7	1.80
Flexibility/mobility	4	1.03
Leisure	3	0.77
Strengthening	2	0.55
Sex		
Male	105	40.39
Female	155	59.61
Marital status		
Single	159	61.15
Married/living with partner	94	36.15
Separated/divorced	7	2.7
Education		
Complete higher education	102	39.23
Full graduate	65	25
Higher education in progress	41	15.76
Incomplete higher education	14	5.38
Graduation in progress	17	6.53
Complete high school	15	5.76
Incomplete high school	5	1.92
Incomplete basic education	1	0.42
	Mean	SD
Practice time (months)	21.32	18.11
Weekly frequency	4.51	1.14
BMI	25.18	3.63
Age	30.15	6.64
Quality of life		
Physical Domain	79.8	11.76
Social Domain	74.1	15.59
Psychological Domain	73.2	13.67
Environment Domain	70.7	12.14

**Table 2**

Associations between motivation to practice, sociodemographic characteristics, and quality of life.

	PD		PDS		ED		SRD		
	Mean (SD)	p							
Reasons for practice		0.953		0.645		0.849		0.864	
Physical	79.84 (12.14)		72.96 (13.9)		74.59 (14.55)		70.64 (12.60)		
Non-physical	79.79 (11.19)		73.87 (13.15)		73.61 (17.05)		70.94 (11.35)		
Sex		0.784		0.362		0.927		0.072	
Male	79.42 (12.08)		73.97 (14.29)		74.37 (16.49)		72.33 (11.22)		
Female	80.04 (11.57)		72.69 (13.28)		73.92 (15.01)		69.59 (12.64)		
Marital status		0.544		0.551		0.976		0.548	
No union	80.71 (11.78)		72.66 (14.01)		74.35 (14.98)		70.41 (11.39)		
Union	79.11 (11.76)		74.20 (13.03)		73.92 (15.01)		71.21 (13.42)		
Education		0.433		0.477		0.873		0.628	
Basic	82.15 (11.29)		75.93 (9.96)		75.92 (10.65)		73.09 (11.05)		
Higher	79.62 (11.80)		73.0 (13.89)		73.97 (15.91)		70.52 (12.22)		
		p	r	p	r	p	r	p	
Practice time (months)		0.025*	0.139	0.009*	0.162	0.027*	0.137	0.037*	0.130
Weekly frequency		0.566	0.036	0.073	0.112	0.171	0.085	0.509	0.041
BMI		0.437	0.049	0.973	0.002	0.892	0.008	0.208	0.078
Age		0.070	-0.112	0.800	0.016	0.560	-0.036	0.980	0.002

PD = Physical Domain, PDS = Psychological Domain, SRD = Social Relations Domain, ED = Environment Domains. \*Spearman correlation ( $p < 0.05$ )

to the time of practice of the modality<sup>19</sup>. In addition to the physical benefits, CrossFit® also improves the capacity of professionals working in the modality (coaches, physical education professionals) since such ability is related to the physical and psychological domains<sup>20</sup>.

In the case of the psychological domain, the average score also indicated good QoL, and it could be inferred that this result confirmed that the physical benefits of exercise were reflected in psychological aspects, such as a sense of well-being, with improved self-esteem and self-confidence<sup>14</sup>. CrossFit® can be performed collectively, ceasing to be an exhausting activity and instead becoming a pleasant activity, with mutual encouragement among participants, making the modality more attractive.

The environment domain of QoL was the worst evaluated, which could be explained by the fact that it is influenced by other aspects, such as social and economic factors, which go beyond the effects of the physical activity itself. In the WHO-QOL-Bref, this domain considers physical safety

and protection, home environment, financial resources, availability and quality of health and social care, opportunity to acquire new information and skills, recreation/leisure participation and opportunities, and physical environment (pollution, noise, traffic, climate, and transport), among others<sup>21</sup>.

It has been reported that environmental factors such as basic sanitation, public safety, health and social care, pollution, traffic, transportation, and climate negatively impact the QoL of the Brazilian population<sup>21</sup>. Significant correlations between longer practice time and better QoL, in all domains, confirmed the influence of the modality for these variables. Studies reported in the literature have evaluated the effects of CrossFit® training time on body weight, anaerobic resistance, and fatigue index in basketball players<sup>22</sup>, vertical jump capabilities of male fighters<sup>23</sup>, vertical jump characteristics of female athletes<sup>24</sup>, and improvements in heart rate, blood pressure, and body composition of male practitioners<sup>25</sup>.

No reports concerning effects on QoL were found in the literature consulted. However, it

seems reasonable to suppose that QoL will be directly influenced by improvements in physical conditions such as muscle strength, aerobic resistance, flexibility, and postural balance.

There is an increasing search for physical activity modalities, including ECPs<sup>9</sup>, that offer sporting and functional characteristics and can be practiced every day, providing a range of health benefits<sup>9</sup>.

CrossFit<sup>®</sup>, as a strength and conditioning training program, has demonstrated a great capacity for optimization in cardiorespiratory and muscular endurance, strength, flexibility, power, speed, coordination, agility, balance, and precision<sup>22</sup>. Brazil has the world's second-highest number of boxes dedicated to the sport, after only the United States<sup>26</sup>. The modality provides an exercise model that aims at improving both health and QoL through the broad development of different physical capacities, favoring the motivation and adherence of its practitioners<sup>26,27</sup>.

The present study is the first to evaluate the QoL of practitioners of this modality, using a validated self-administered questionnaire<sup>10</sup> with clear and coherent questions that facilitated understanding and responding. The initial data obtained here can be used to assist the development of further investigations designed to measure this variable.

New studies are needed to identify and quantify the relationships existing between the modality and other factors in order to improve knowledge within the scientific and clinical communities, in addition to facilitating the planning of the gyms themselves. Despite the novelty of this study, it has some limitations. The sample was obtained based on convenience, so it could not be considered comprehensive and diverse, with a possible selection bias. In addition, the observational/cross-sectional design of the study prevented the determination of a cause-effect relationship between training results and QoL.

## CONCLUSIONS

The practitioners showed good results for QoL, with the highest scores in the physical domain, followed by the social domain, the psychological domain, and finally, the environment

domain. Longer practice time was correlated with higher averages in all QoL domains.

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