

THE IMPACT OF QUARANTINE ON BODY IMAGE AND LIFESTYLE HABITS IN RESISTANCE TRAINING PRACTITIONERS

IMPACTO DA QUARENTENA SOBRE A PERCEPÇÃO DA IMAGEM CORPORAL E HÁBITOS DOS PRATICANTES DE MUSCULAÇÃO

IMPACTO DE LA CUARENTENA SOBRE LA PERCEPCIÓN DE LA IMAGEN CORPORAL Y HÁBITOS DE LOS PRACTICANTES DE MUSCULACIÓN

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ABSTRACT

Introduction: In order to curb the abrupt advance of “Coronavirus Disease 2019” (COVID-19) and prevent the collapse of the health system, authorities around the world have opted for social distancing strategies that include closing gyms, among other measures. **Objectives:** This study analyzed the effect of social distancing on resistance training practitioners’ quality of life and perception of body image in silhouette. **Methods:** The volunteers were contacted through social media; data were collected between April 13 and 19, 2020, through a structured questionnaire, comprised of an Informed Consent Form, four questions about COVID-19 and restrictive measures; and twenty-nine questions designed to characterize the individuals’ habits; as well as the Short Form Health Survey 36 questionnaire. All the questionnaires were applied over the Internet, using Google Forms®. After collection, the data were tabulated and interpreted using the software program AppleNumbers®, and subsequently presented as mean, standard deviation and percentiles. **Results:** The results revealed changes in perception of body image and decreased frequency and satisfaction with training. There was also an increase in sedentary behavior, food intake, and amount of sleep; and a reduction in parameters related to health and quality of life. **Conclusions:** The strategy of social distancing, adopted to curb the progress of COVID-19, has harmful consequences for resistance training practitioners, such as increased calorie intake, stress and anxiety, as well as possible psychological effects. These consequences, in turn, lead to changes in self-perception of body image and in the quality of training. **Level of Evidence III; Cross-sectional study of non-consecutive patients; without uniformly applied reference standard.**

Keywords: COVID-19; Body composition; Quarantine; Sedentary behaviors; Resistance training; Quality of life.

RESUMO

Introdução: Com o intuito de conter o avanço abrupto da “Coronavirus Disease 2019” (COVID-19) e evitar o colapso do sistema de saúde, autoridades mundiais optaram por estratégias de distanciamento social que compreendem o fechamento de academias, entre outras providências. **Objetivos:** Este estudo analisou o efeito do distanciamento social sobre a qualidade de vida e a percepção da imagem corporal em silhueta de praticantes de treinamento de força. **Métodos:** O contato com os voluntários foi realizado pelas mídias sociais e os dados foram coletados entre 13 e 19 de abril de 2020, por meio de um questionário estruturado, composto pelo Termo de consentimento livre e esclarecido, quatro questões sobre COVID-19 e medidas restritivas, vinte e nove questões destinadas à caracterização dos hábitos dos indivíduos, além do questionário Short Form Health Survey 36. Todos os questionários foram realizados no Google Forms®, com o auxílio da Internet. Depois da coleta, os dados foram tabulados e interpretados com o software AppleNumbers® e apresentados como média, desvio padrão e percentis. **Resultados:** Os resultados revelaram alterações na percepção da imagem corporal, diminuição do volume e da satisfação com o treino. Ademais, foi observado um aumento do comportamento sedentário, da ingestão de alimentos e da quantidade de sono, além da redução dos parâmetros relacionados com a saúde e a qualidade de vida. **Conclusões:** A estratégia de distanciamento social adotada para conter o avanço da COVID-19 revela consequências deletérias para os praticantes de treinamento de força, a saber, aumento da ingestão calórica, do estresse, da ansiedade, além de possíveis acometimentos de ordem psicológica. Essas consequências, por sua vez, promoveram alterações na percepção da autoimagem e na qualidade do treinamento. **Nível de Evidência III; Estudo transversal de pacientes não consecutivos; sem padrão de referência aplicado uniformemente.**

Descritores: COVID-19; Composição corporal; Quarentena; Comportamento sedentário; Treinamento de resistência; Qualidade de vida.

RESUMEN

Introducción: Con la intención de contener el avance abrupto de la “Coronavirus Disease 2019” (COVID-19) y evitar el colapso del sistema de salud, autoridades mundiales optaron por estrategias de distanciamiento social que comprenden el cierre de gimnasios, entre otras medidas. **Objetivos:** Este estudio analizó el efecto del distanciamiento social sobre la



calidad de vida y la percepción de la imagen corporal en silueta de practicantes de entrenamiento de fuerza. Métodos: El contacto con los voluntarios fue realizado a través de las redes sociales y los datos fueron colectados entre el 13 y el 19 de abril de 2020, por medio de un cuestionario estructurado, compuesto por el Término de consentimiento libre y esclarecido, cuatro cuestiones sobre COVID-19 y medidas restrictivas, veintinueve cuestiones destinadas a la caracterización de los hábitos de los individuos, además del cuestionario Short Form Health Survey 36. Todos los cuestionarios fueron realizados en Google Forms®, con la ayuda de Internet. Después de la colecta, los datos fueron tabulados e interpretados con el software AppleNumbers® y presentados como promedio, desviación estándar y percentiles. Resultados: Los resultados revelaron alteraciones en la percepción de la imagen corporal, disminución del volumen y de la satisfacción con el entrenamiento. Además, fue observado un aumento del comportamiento sedentario, de la ingestión de alimentos y de la cantidad de sueño; además de la reducción de los parámetros relacionados con la salud y la calidad de vida. Conclusiones: La estrategia de distanciamiento social adoptada para contener el avance de la COVID-19 revela consecuencias deletéreas para los practicantes de entrenamiento de fuerza, tales como aumento de la ingestión calórica, estrés, ansiedad, además de posibles acometimientos de orden psicológico. Esas consecuencias, a su vez, promovieron alteraciones en la percepción de la autoimagen y en la calidad del entrenamiento. Nivel de evidencia III; Estudio transversal de pacientes no consecutivos; sin patrón de referencia aplicado uniformemente.

Descriptores: COVID-19; Composición corporal; Cuarentena; Conducta Sedentaria; Entrenamiento de resistencia; Calidad de vida.

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INTRODUCTION

In December of 2019, Chinese scientists identified a series of cases of acute respiratory syndrome – posteriorly called “Coronavirus Disease 2019” (COVID-19) – caused by a microorganism belonging to the group of B betacoronaviruses; which, by similarity with the virus of severe acute respiratory syndrome of 2003 (SARS-CoV), was classified as SARS-CoV-2¹⁻³. The mean time of virus incubation – five days – coincides with the worsening of the symptoms; such as fever, coughing, myalgia or fatigue, expectoration, dyspnea, headache, dizziness, diarrhea, nausea and vomit^{3,6}. It is estimated that, once infected, a subject may transmit the virus for, an average, other 2.2 to 3.77 people³⁻⁶.

In order to contain the abrupt advance of the disease, and to avoid the collapse of the health system, world authorities focused on tactical and traditional responses to outbreaks, opting for strategies of social distancing that comprehend; among other providences; the closing of frontiers, schools, stores, churches and gyms, in addition to restrictions on the use of public transport⁷⁻⁹.

The social distancing and the restriction imposed to several sectors of economy significantly altered the normal routine of the population, favoring the adoption of sedentary behavior; such as excessive time of cellular use, TV, electronic games; high ingestion of ultra-processed food, and physical inactivity¹⁰. This new lifestyle, imposed by fortuitous circumstances, may boost the increase of anxiety, depression and panic in the general population^{11,12}. The exercise, even practiced at moderate intensity is benefic to immune system and to the prevention of respiratory diseases, caused by virus; in addition to be a strong ally in the reduction of anxiety.^{13,14}

One of the most prescribed exercise modalities in the world for health promotion and aesthetic objectives is the resistance training (RT)¹⁵. The RT is commonly indicated to subjects searching muscle adaptations, either with the objective of improving athletic performance or the prospect of obtaining a better health condition¹⁶. Significant increases in muscle strength and hypertrophy, in addition to relevant changes in body composition are reached with the regular practice of the modality by men and women of different ages^{17,18}. Furthermore, the health senescence, the decrease in the risk of chronic diseases and cancer, the regulation of the immune system and hormone production¹⁹, the improvement of quality of life related to the health of elderly²⁰, and physiological and psychological alterations favorable to the reduction of sedentary behavior²¹ are some of the additional benefits attributed to RT.

Eventual prolonged interruptions of RT may bring unfavorable consequences to the practitioner that uses this resource as a non-pharmacological tool for the treatment of diseases such as hypertension, diabetes, depression^{13,22}, or limitations of functional order²⁰. Moreover, subjects practicing RT without the follow-up of a certified physical education professional, run the risk of neglecting methodological training variables and biomechanical patterns, essential to safety and efficiency of exercise¹⁹.

Another factor to be affected by social distancing measures; in addition to reducing the levels of physical activity^{23,24}; is the quality of the population's diet, as, under these circumstances, an increase in carbohydrate ingestion is expected, as a rule, from ultra-processed foods^{10,23}. To note, while a healthy diet can promote better mental health conditions¹², a high ingestion of carbohydrates induces alterations in body composition²⁵ that, in turn, can interfere with self-perception of image, generating dissatisfaction of the subject with his own body²⁶.

To understand the impacts of a compulsory, unexpected and atypical change in social relationships on working habits and exercise practice; that affects the practitioners of RT in times of pandemic, is important to the elaboration and development of psychosocial approaches that ensure health and quality of life of this population. Thus, the aim of the present study was to analyze the effect of social distancing on quality of life and perception of photo silhouette in RT practitioners. The initial hypothesis is that the closing of the gyms; due to measures of social distancing; increases the consumption of food, and interferes in the self-perception of body image, as well as the quality of life from RT practitioners.

MATERIALS AND METHODS

Subjects

Nine hundred and seventy-five practitioners participated of the present study; all, with more than 18 years of age. Only 965 informed their gender. Table 1 presents the differences in body composition of men and women, participants of the study.

Data collection

Data from the present study were collected between April 13 and 19 of 2020, by a structured questionnaire sent via internet, with the help of the site Google Forms®. The contact with the volunteers was conducted by e-mail, direct messages and social media. These procedures were used to avoid presentational approaches, and to minimize the risk of propagation of COVID-19.

The questionnaire was composed of four questions about COVID-19 and restrictive measures; twenty-nine questions about the characteristics and habits of life from the individuals; a scale of image self-perception evaluated by photo silhouette²⁶; one question about body satisfaction (BS); one question about training satisfaction (TS); and the questionnaire about health and quality of life, "Short Form Health Survey 36 (SF-36)".

All volunteers were informed about the confidentiality of their responses, besides the ability to interrupt the process, or to stop responding any of the questions.

Self-perception of image

The perception of body image was evaluated by a photo silhouette scale, in which the volunteers indicated the silhouettes that better represented their body composition. In the scale, the silhouettes are divided in five stages (P); being P1, equivalent to a slim body; P2, a body within the average weight; P3, an overweight body; P4, an athletic body; and, P5, a hyper muscular body²⁶. (Figure 1)

Health and quality of life

For the evaluation of health and quality of life from volunteers, a Short Form Health Survey 36 (SF-36) questionnaire was used. This tool is composed of 36 questions divided into eight dimensions: functional capacity, physical aspects, pain, general state of health, vitality, social aspects, emotional aspects, and mental health. Each dimension presents an score varying from zero to 100, in which zero corresponds to the worst state, and 100 the best state²⁷.

Table 1. General data of characterization and experience of the participants.

	Men (51.2%)	Women (48.8%)
Body mass	83.52 ± 12.75	64.16 ± 9.92
Height	1.75 ± 0.08	1.61 ± 0.13
Body mass index	27.12 ± 8.35	24.24 ± 4.10
Training experience (%)		
Inferior to 1 years	23.66	29.76
Between 1 and 3 years	25.72	30.85
Between 3 and 5 years	13.17	13.13
Superior to 5 years	37.45	26.26
Weekly frequency (%)		
1 or 2 times	4.34	6.09
2 or 3 times	9.09	15.22
3 or 4 times	18.60	19.78
4 or 5 times	23.76	22.17
5 or 6 times	34.50	25.43
Every day	9.71	11.30

Data from characterization of the sample are presented as means ± SD. Differences in body composition between genders – men and women. Data about the RT experience from men and women are expressed as percentiles of the obtained responses.

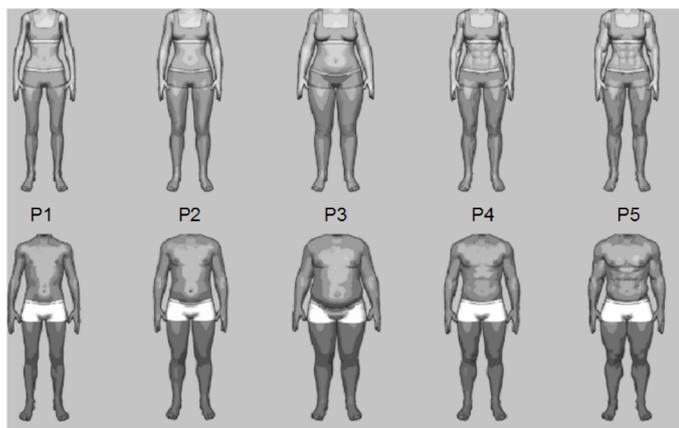


Figure 1. Photo silhouette scale.

RESULTS

Table 2 presents the percentile responses of self-perception of image evaluated by photo silhouette in men and women, comparing the pre and post confinement periods.

Table 3 presents the percentage distribution of the subjects, men and women, as regards body satisfaction (BS), and training satisfaction (TS), during the confinement.

Table 4 presents the percentage responses about sedentary behavior (caloric intake, supplements consumption, quantity and quality of training and sleep) from RT practitioners during the confinement; considering the whole sample, regardless of gender.

Results of questions from quality of life related to the domains of health, considering the whole sample and the specific moment of the social distancing are presented in Table 5.

Table 2. Self-perception of image evaluated by Photo silhouette pre and post confinement.

	Men		Women	
	Pre (%)	Post (%)	Pre (%)	Post (%)
P1	12.0	14.2	8.2	7.3
P2	24.0	36.6	48.5	42.7
P3	4.4	10.9	20.7	41.0
P4	40.7	31.5	18.3	7.3
P5	18.5	5.4	4.1	1.2

Data presented as a percentage of total responses obtained from men and women in the periods pre and post confinement.

Table 3. Data from body satisfaction (BS) and training satisfaction (TS).

	Men		Women	
	BS (%)	TS (%)	BS (%)	TS (%)
Totally dissatisfied	8.5	28.6	13.1	29.5
Little dissatisfied	18.5	22.4	21.2	22.2
Satisfied	32.1	22.2	31.4	22.2
Very Satisfied	33.5	17.7	29.4	17.7
Totally satisfied	7.5	9.1	4.9	8.4

Data presented as a percentage of total responses obtained from men and women.

Table 4. General data of the habits from the sample.

During the quarantine, do you think you are eating more than normal?	%
Yes	58.6
No	41.4
During the quarantine, the intake of salt in your home...	
Increased	15.7
Reduced	5.3
Remained the same	79.0
During the quarantine, did you sleep more than the normal?	
Yes	60.7
No	39.3
Do you normally use supplements?	
Yes	49.5
No	50.5
During the quarantine, do you maintain your supplementation?	
Yes	26.2
No	65.2
Only a few	8.7
During the quarantine, are you training?	
More than the usual	9.5
Less than the usual	74.9
The same thing	15.6
Do you think that the training during quarantine makes a difference?	
Yes	87.6
No	4.5
I can't say	7.8

Data are expressed by percentage of responses obtained, considering all individuals, men and women.

Table 5. Summary survey of the items from SF-36.

	Mean ± SD
Functional capacity	40 ± 63.6
Physical Aspects	50 ± 35.4
Pain	50 ± 70.7
General State of Health	15 ± 35.4
Vitality	45 ± 7.07
Social Aspects	50 ± 0.00
Emotional Aspects	50 ± 70.7
Mental Health	40 ± 22.6

Data presented as mean and standard deviation (SD) from total responses obtained, considering all individuals, men and women.

DISCUSSION

The present study was conducted with the objective of analyzing the effect of social distancing on quality of life and self-perception of body image evaluated by photo silhouette of RT practitioners. The measures of contention resulted in the interruption of non-essential services, as an example the gyms. Given this scenario, 50.62% of the male subjects, and 39.39% of the female subjects reported the interruption of their RT programs, practiced for three years or more. It should be noted that 67.97% of the males, and 58.90% of the females maintained a training frequency of more than four times per week (Table 1). The volunteers reported that they had not trained at a gym for more than one month; and declared that they are training "less than normal" (Table 4). In general, the volunteers were less satisfied with the training, considering the difference between the levels of satisfaction with training at home and training at the gym.

The scenario may have contributed to the variation in the self-perception of body image in men and women during the social distancing (Table 2); suggesting a tendency to higher levels of dissatisfaction of the volunteers with their own body, regardless of the gender (Table 3). In a study that evaluated the self-perception of image by photo silhouette, women presented more positive experiences with body within the average weight (P2); while men with athletic silhouette (P4). For the slim silhouettes (P1) and hyper muscular (P5), women reposted a more negative feeling than men. However, of the overweight silhouette (P3), both groups presented a more negative feeling²⁶.

The increase in caloric intake observed in Table 4 is another factor that may have contributed to the negative self-perception of image. De Morais et al., (2019) compared the impact of different nutritional strategies on the scale of photo silhouette in distinct classes of resistance training practitioners. The authors observed positive alterations of self-perception of image, significant increase in body mass, muscle thickness and circumference of body segments in the group that performed that strategy of higher carbohydrate ingestion; while no alteration was observed in the group of lower carbohydrate ingestion. To note, resistance training practitioners commonly control macronutrient intake and maintain a strict training routine. Still, the increase in the ingestion of carbohydrates was sufficient to promote relevant modifications in body composition and self-perception of image. In recreationally trained RT subjects, the changes perceived in the photo silhouette may also reflect alterations in measures of body segments and body mass.

Based on the present results, 58.6% of the interviewed, men and women, reported to eat more, while 60.7% declared that they slept more than normal during the confinement. Volunteers reported an increase in the amount of food, but not in the amount of salt directly ingested (Table 4), while it is reasonable to infer that sodium intake was also superior due to the higher quantity of calories during this period. In a study with 1047 volunteers of several continents, the intake of

industrialized food and number of meals was increased during the measures of social distancing²³.

The increase in the quantity of food reported by the subjects may have reduced the utilization of supplements, as 65.2% ceased the use of these resources during the measures of social distancing. Another factor to be considered is the association between the use of supplements with the quantity and quality of the training. However, it is necessary to emphasize that any of the hypotheses alone would not be sufficient to justify the interruption in the use of these items; specially when prescribed by nutrition professionals; given that the increase in caloric intake will not always be synonymous with adequate food intake; and, as a consequence of detraining and disuse, a loss of muscle mass is expected^{28,29}.

Concerning agreement with social distance, 57.3% of the participants declared that they left their homes only in case of need (less than two times per week); 17.4%, on an average of three times per week; 14.5%, four to five times per week; and, only 10.7% did not follow the rules of social distancing. Even with the ease of transmission of the virus, 99.5% of participants reported not to be infected with COVID-19, or said they did not know if they were, or not, infected. However, 39.89% of the volunteers reported the experience at least one of the symptoms of the disease, such as headache, fever, cough, runny nose, sore throat or diarrhea. These data reinforce the necessity of the adoption of preventive measures, on the occasion of the reopening of the gyms, in view of fallibility of self-assessment^{7,9,30}.

Volunteers displayed highly heterogeneous responses – considering mean and standard deviation – for the six domains of health from the SF-36 questionnaire; with greater homogeneity for the "Vitality" and "Social Aspects" domains. The scores obtained for these domains, relatively low, revealed a negative impact of social distancing on health related quality of life. This condition can be potentiated by the significant increase in stress levels, depression and anxiety in people under confinement¹². Despite the reduction in training frequency, 87.6% of the participants of the present study reported that the training "makes a difference" during the social distancing. The maintenance of the routine, can contribute to the reduction of stress, anxiety, and depression^{12,19}. A systemic review with meta-analysis revealed that the practice of RT resulted in significant improvements of functional capacity, pain, physical aspects, general health, mental health, and vitality; but not of emotional and social aspects, evaluated by the SF- 36 questionnaire²⁰. It worth noting that gyms, in addition to environments conducive to RT practice, consist of real spaces of socialization, and the influence of this interaction on emotional and social aspects should not be overlooked.

As all studies, this one also presents limitations that should be considered for the interpretation of the results. The collection occurred in a determined moment of the isolation – from 04/13/2020 to 04/19/2020. Therefore, these results should not be extrapolated to other periods; given that, in several regions, among those surveyed, there was an extension of the social distancing measures.

Future studies can use the same instruments applied here to evaluate possible alterations in the presented results. In addition, other instruments, such as the affective scale, and the sleep quality could be used to evaluate the impact of social distancing in people's lives, or the reapplication of this instrument to other moments, and in other populations can be convenient.

CONCLUSION

The strategy of social distancing adopted to contain the advance of COVID-19; reveals deleterious consequences to RT practitioners, such as

the increase of caloric consumption, stress, anxiety, and possible psychological disorders; that, in turn, promote alterations in self-perception of image and quality of training. The practice of home-based training is considered an important tool to promote health and well-being. Nevertheless, the control of training variables becomes even more relevant

under these circumstances, so that the adverse effects resulting from the practice are avoided.

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