MOOD STATES AND QUALITY OF LIFE IN PARALYMPIC BOCCIA ATHLETES IN THE COVID-19 PANDEMIC

ESTADO DE HUMOR E QUALIDADE DE VIDA DE ATLETAS DE BOCHA PARAOLÍMPICA NA PANDEMIA DE COVID-19

ESTADO DE ÁNIMO Y CALIDAD DE VIDA DE LOS ATLETAS PARALÍMPICOS DE BOCHAS EN LA PANDEMIA DE COVID-19

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ABSTRACT

Introduction: Although studies have been conducted in the athlete population during the pandemic, its impacts on Paralympic athletes are still unknown. Objective: To evaluate the mood and quality of life of Paralympic boccia players during the COVID-19 pandemic period. Method: Questionnaires assessing mood, quality of life, and demographic data were sent electronically via social media. The study included 43 athletes from all functional classes (BC1 = 8, BC2 = 12, BC3 = 11, and BC4 = 11) and four regions of Brazil (Northeast = 12, Southeast = 12, Central-West = 3, and South = 17). ANOVA, t test, and similar non-parametric tests were used, with the respective effect sizes (ES). Results: Regarding mood states, BC4 athletes differed from BC1 athletes in the depression subscale score (25.5 vs. 14.5, p = 0.026, ES=1.47). The fatigue subscale score differed between BC4 and BC1 athletes (17.8 vs. 10.4, p = 0.023, ES=1.38) and between BC4 and BC2 athletes (17.8 vs 10.3, p = 0.008, ES=1.32). BC4 athletes had higher total mood disturbance (TMD) values than BC1 (175 vs. 141, p = 0.025, ES=1.35) and BC2 (175 vs.141, p = 0.025, ES=0.97) athletes. Lower stress (18.5 vs.21.8, p = 0.027, ES=0.64) and TMD (148.0 vs 162.0; p = 0.044; ES= 0.53) values were observed among the national level athletes. In terms of quality of life, differences were found between BC4 and BC2 athletes in the psychological health domain (3.73 vs. 4.49, p = 0.024, ES=0.89) and between athletes from the Northeast and South in the environment domain (3.39 vs. 4.18, p=0.030, ES=0.44). Conclusion: BC4 athletes are more susceptible to negative mood and quality-of-life perceptions. Additionally, athletes from the Northeast region may have poorer perceptions of quality of life related to the environment in which they live. ***Level of evidence III; Retrospective study.***

Keywords: Persons with disabilities; COVID-19; Athletes; Quality of life; Sports psychology.

RESUMO

Introdução: Embora estudos tenham sido realizados na população de atletas durante a pandemia, seus impactos em atletas paraolímpicos ainda são desconhecidos. Objetivo: Avaliar o humor e a qualidade de vida de jogadores paraolímpicos de bocha no período da Pandemia de COVID-19. Método: Foram enviados eletronicamente pelas redes sociais questionários que avaliam humor, qualidade de vida e dados demográficos. Participaram do estudo 43 atletas, de todas as classes funcionais (BC1 = 8; BC2 = 12; BC3 = 11; BC4 = 11) e quatro regiões do país (Nordeste = 12; Sudeste = 12; Centro-Oeste = 3; e Sul = 17). Foram usados ANOVA, teste t e similares não paramétricos, com os respectivos tamanhos do efeito (TE). Resultados: Sobre os estados de humor, atletas BC4 diferem dos atletas BC1 na subescala "depressão" (25,5 vs. 14,5; p = 0,026; TE = 1,47). A subescala "fadiga" difere entre atletas BC4 e BC1 (17,8 vs. 10,4; p = 0,023; TE = 1,38) e entre atletas BC4 e BC2 (17,8 vs. 10,3; p = 0,008; TE = 1,32). Atletas BC4 apresentaram valores maiores de distúrbio total do humor (DTH) do que atletas BC1 (175 vs. 141; p = 0,025; TE = 1,35) e BC2 (175 vs. 141; p = 0,025; TE = 0,97). Foram observados valores menores nos atletas de nível nacional em "tensão" (18,5 vs. 21,8; p = 0,027; TE = 0,64) e em DTH (148,0 vs. 162,0; p = 0,044; TE = 0,53). Quanto à qualidade de vida, foram encontradas diferenças entre atletas BC4 e BC2 (3,73 vs. 4,49; p = 0,024; TE = 0,89) no domínio "psicológico" e entre atletas do Nordeste e Sul no domínio "ambiental" (3,39 vs. 4,18; p = 0,030; TE = 0,44). Conclusão: Os atletas BC4 estão mais suscetíveis a percepções negativas de humor e qualidade de vida. Adicionalmente, atletas da região Nordeste podem ter piores percepções do ambiente em que vivem sobre a qualidade de vida. ***Nível de evidência III; Estudo retrospectivo.***

Descritores: *Pessoas com deficiência; COVID-19; Atletas; Qualidade de vida; Psicologia do esporte.*

RESUMEN

Introducción: Aunque se han realizado estudios en la población de atletas durante la pandemia, aún se desconocen sus impactos en los atletas paralímpicos. Objetivo: Evaluar el estado de ánimo y la calidad de vida de los jugadores de bochas paralímpicos durante el período de la pandemia COVID-19. Método: Se enviaron cuestionarios que evaluaban el estado de ánimo, la calidad de vida y los datos demográficos por vía electrónica a través de las redes sociales. El estudio incluyó a 43 atletas de todas las clases funcionales (BC1 = 8; BC2 = 12; BC3 = 11; BC4 = 11) y de cuatro regiones del país (Noreste = 12; Sureste = 12; Medio Oeste = 3; y Sur = 17). Se utilizaron el ANOVA, la prueba

t y pruebas no paramétricas similares, con los respectivos tamaños del efecto (TE). Resultados: En cuanto a los estados de ánimo, los atletas BC4 se diferencian de los atletas BC1 en la subescala "depresión" (25,5 frente a 14,5; p = 0,026; TE = 1,47). La subescala "fatiga" difiere entre los atletas BC4 y BC1 (17,8 frente a 10,4; p = 0,023; TE = 1,38) y entre los atletas BC4 y BC2 (17,8 frente a 10,3; p = 0,008; TE = 1,32). Los atletas BC4 presentaron valores más altos de alteración total del estado de ánimo (DTH) que los atletas BC1 (175 frente a 141; p = 0,025; TE = 1,35) y BC2 (175 frente 141; p = 0,025; TE = 0,97). Se observaron valores más bajos en atletas de nivel nacional en "tensión" (18,5 frente a 21,8; p = 0,027; TE = 0,64) y en DTH (148,0 frente a 162,0; p = 0,044; TE = 0,53). En términos de calidad de vida, se encontraron diferencias entre atletas BC4 y BC2 (3,73 frente a 4,49; p = 0,024; TE = 0,89) en el dominio "psicológico", y entre atletas del Noreste y Sur en el dominio "ambiental" (3,39 frente a 4,18; p = 0,030; TE = 0,44). Conclusión: Los atletas BC4 son más susceptibles a las percepciones negativas del estado de ánimo y la calidad de vida. Además, los atletas de la región noreste pueden tener peores percepciones de su entorno en cuanto a calidad de vida. ***Nivel de evidencia III; Estudio retrospectivo.***

Descriptores: *Personas con discapacidad; COVID-19; Atletas; Calidad de vida; Psicología del deporte.*

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INTRODUCTION

Social isolation has produced positive effects by reducing the propagation speed of the new coronavirus (SARS-COV-2 or COVID-19), while increasing the need for support for the mental health conditions caused by isolation.[1] Groups considered at risk, such as people with disabilities, morbidities, chronic degenerative diseases, and pathological conditions that influence immunity, require greater care during this period.[2]

People with severe disabilities can suffer from psychological problems arising from the most diverse personal and environmental reasons.[3] On the other hand, when they engage in sports in a systematic way, there is a substantial reduction in general health problems, and various types of benefits, including psychological ones, are achieved.[4] It is speculated that one of the factors that will suffer the most negative impact during a period of isolation is the population´s perception of quality of life, [5] particularly among those people with a higher risk of contamination.

Among the most traditional modalities in the Paralympic Program, boccia is characterized by the participation of athletes with severe disabilities. It is a sport whose main demands on athletes are strong cognitive decision-making skills together with the ability to make adjustments to the technical-tactical situation during training and competition, with emphasis on the accuracy and precision of motor gestures.[6]

Paralympic boccia is decentrally organized in Brazil, with regional competitions throughout the year, in addition to the national championship competition. Additionally, athletes at varying competitive levels from different regions of Brazil are exposed to different financial and methodological conditions that support their routine activities, from participation in competitions to the maintenance of support materials for the athlete.[7] The modality is divided into 4 functional classes, two of which are reserved for cerebral palsy (BC1 and BC2) and two open to types of severe disability other than cerebral palsy (BC3 and BC4).[6] Usually, the latter two classes are made up of athletes with quadriplegia, deformities, and degenerative diseases.

Although studies were conducted with conventional athletes during the pandemic period,[8,9] nothing has been reported or documented about the mental health indicators of Paralympic athletes to date. Thus, the objective of our study was to evaluate the mood and the quality of life of Paralympic boccia players during the COVID-19 pandemic. Additionally, we have tried to identify possible differences in the perceptions of mood and quality of life between athletes of different functional classes, competitive levels, and regions of the country.

MATERIALS AND METHODS

All procedures followed in this investigation adhered to the recommended ethical assumptions, and it was duly approved by the local institution (opinion no. 4067261). To characterize the information related to the practice of Paralympic boccia, the research team formulated questions for the extraction of demographic and sport-related data from the athletes. Thus, a specific form was created to collect age, sex, time playing the sport, competition experience level (regional and national), weekly pre-pandemic training frequency, pre-pandemic training hours per day, whether or not the athlete participated on the Brazilian national team, functional class (BC1, BC2, BC3, or BC4), and home region (North, Northeast, Central-West, South, or Southeast). For home region, the geographical divisions were used, instead of the administrative divisions defined by ANDE to organize the regional competitions.

The POMS (Profile of Mood States) questionnaire used to measure mood states was initially developed for observation of mood states in psychiatric patients. However, it has been used in several sports studies and has been validated for Brazil.[10] This questionnaire, consisting of 65 closed questions, allows the qualitative assessment of six transitory mood states: stress, depression, anger, vigor, fatigue, and mental confusion. Each item is analyzed using a 4-point Likert scale. Total mood disturbance (TMD) was calculated as the sum of the negative factor scores minus the sum of the positive factor scores.

To assess quality of life, we chose the WHOQOL-BREF questionnaire.[11–13] This is a generic instrument composed of 26 items, with 24 items that evaluate four domains (physical health, psychological health, social relationships, and environment), in addition to two unscored questions focused on the quality of life and health in general. This questionnaire is used in several contexts related to people with disabilities, as well as playing an important role in checking the sensitivity of exercise-based intervention in this population.[14–16]

The demographic information collection questions and the questionnaires were digitalized and converted into an electronic form using the Google Forms Platform application accessed at https://forms.gle/8cuQjHHvP6qKTNYo9. The form was sent between 04/Jun/2020 and 05/Jul/2020 when a sustained curve of COVID-19 cases was being recorded in Brazil (https://covid.saude.gov.br). All the questions in the instruments, as well as the pertinent forms of response were respected. An explanatory video about the survey procedures, its objectives, and tips on answering the questions was sent along with the link to the form. The form was sent via WhatsApp, using the snowball method.[17]

After all responses were issued and any inconsistencies in the questions had been verified, all the responses were transferred to an electronic spreadsheet and all dimensions related to all questionnaires were computed (Demographic data, POMS, and WOOLQOL-BREF). To analyze the normality of the responses, we used the Shapiro-Wilk test, and we investigated the curve by means of histograms. Regarding the

mood profile, we considered the mental confusion, depression, fatigue, and vigor subscales as parametric. The stress, anger, and TMD subscales were considered non-parametric. For perception of the quality of life, the physical health domain and personal relationships subscale were considered parametric, while the psychological health domain and environment subscale were considered non-parametric. For descriptive purposes and to verify the breakdown of subjects within each demographic characteristic studied, the percentages by response for each variable analyzed (age, sex, functional class, type of disability, region, time playing the sport, pre-pandemic weekly training frequency, daily pre-pandemic hours of training, participation on the boccia Brazilian team, and competitive level) were calculated. These variables are presented descriptively in Table 1.

Next, taking the frequency of responses, the number of subjects in each group selected, and the weight/importance of these variables in sports training and performance into account, analysis groups were selected for comparisons of mood and quality-of-life indicators. In this sense, one-way variance analysis (ANOVA) with Tukey's post-hoc and the Kruskal-Wallis tests were used to compare the mood states and the quality of life domains of the different functional classes (BC1, BC2, BC3, and BC4), the years of experience playing the sport (1 to 5 years, 5 to 10 years, and more than 10 years), and the region of the country where they live (Northeast, Southeast, Central-West, and South). The region was included in the analyses to try to identify any correlation with the respective velocities of the increase of the pandemic. To compare the groups in terms of competitive level (national or regional), a t test for independent samples and the Mann-Whitney test were used. All statistical procedures were performed using Jamovi software (version 1.0.8.0, for MacOS). Additionally, the effect sizes (Cohen's d) were calculated using G*POWER, version 3.1.9.3 (Faul, Dusseldorf, Germany). To classify them, we considered the following indicators: insignificant (<0.19), small (0.20 – 0.49), medium (0.50 – 0.79), large (0.80 – 1.29), and very large (>1.30).[18] A level of significance of 5% ($p<0.05$) was considered in all analyses.

RESULTS

Forty-two athletes completed and returned the electronic form. The demographic characteristics of all athletes who responded to the proposed form are presented in Table 1.

Table 2 shows the comparisons of the mood state subscales among the analyzed groups. In general, we continue to observe maintenance of the "iceberg" profile in the comparison extracts, with the exception of the group BC4 athletes. Considering the functional classification groups, statistically significant differences were observed in the depression subscale between classes BC4 and BC1 (25.5 vs. 14.5, F=3.563, p=0.026) and in the fatigue subscale between BC4 and BC1 (17.8 vs. 10.4, F=4.901, p=0.023) and BC4 and BC2 athletes (17.8 vs. 10.3, F=4.901, p=0.008). Class BC4 athletes also had higher TMD scores than the BC1 (175 vs. 141, F=3.815, p=0.025) and BC2 (175 vs. 141, F=3.815, p=0.025) athletes. There were no significant differences in the stress (F=0.797, p=0.503), vigor (F=1.173, p=0.333), and mental confusion (F=1.956, p=0.137) subscales between any of the functional classes analyzed. No significant differences were verified in any of the mood subscales when years of experience in the sport were compared: stress (F=0.2243, p=0.800), depression (F=0.0543, p=0.947), anger (F=0.1445, p=0.866), vigor (F=1.9366, p=0.157), fatigue (F=0.5191, p=0.599), mental confusion (F=1.3873, p=0.262), and TMD (F=0.1332, p=0.876). In the analysis of the groups by competitive level, significantly lower values for athletes at the national level for the stress subscale (18.5 vs. 21.8, p=0.027) and TMD (148.0 vs. 162.0, p=0.044) were observed. No significant differences were observed among the other subscales for athletes at the national and regional levels: depression (p=0.194), anger (p=0.189), vigor (p=0.239), fatigue (p=0.137), and mental confusion (p=0.269). When comparing the groups by geographic region of the country, no significant differences were observed for the stress (F=0.9616, p=0.391), depression (F=1.2331, p=0.310), anger (F=0.0484, p=0.953), vigor (F=0.2823, p=0.756), fatigue (F=1.0964, p=0.344), mental confusion (F=0.2134, p=0.809) mood subscales or the TMD (F=0.5038, p=0.607).

In Table 3, comparisons of the quality-of-life domains are shown by study analysis group. A statistical difference in the psychological health domain was observed in the comparison between BC4 and BC2 class athletes (3.73 vs. 4.49, F=3.298, p=0.024). No statistical differences were observed between the functional classes in the other domains: physical health (F=0.903, p=0.448), personal relationships (F=1.008, p=0.399), environment (F=1.579, p=0.210), and sum of domains (F=2.150, p=0.109). In our analysis of the groups by years of experience playing the sport, we observed no statistical differences in the quality-of-life domains: physical health (F=0.1833, p=0.833), psychological health (F=0.2023, p=0.818), personal relationships (F=1.8167, p=0.176), environment (F=0.0862, p=0.918), and sum of the domains (F=0.1698, p=0.844). Regarding the competitive level, there were no quality-of-life domain differences between regional- and national-level athletes: physical health (p=0.073), psychological health (p=0.864), personal relationships (p=0.695), environment (p=0.922), and for the sum of the domains (p=0.548). Among the athletes from different geographic regions, significant differences were observed in the environment domain between athletes from the

Table 1. Demographic characteristics of the athletes who responded to the form.

Demographic data (N=43)	N (%)
Age	
(Mean±SD)	29.95±11.76
Sex	
Male	30 (69.7)
Female	13 (30.2)
Groups by functional class	
BC1	8 (18.60)
BC2	12 (27.90)
BC3	11 (25.58)
BC4	11 (25.58)
Not specified	1 (2.32)
Type of disability	
Cerebral palsy	24 (55.81)
Quadriplegia	4 (9.30)
Poliomyelitis	3 (6.96)
Deformity and similar nonspecific conditions	7 (16.26)
Muscular dystrophy	5 (11.63)
Geographic region of Brazil	
Northeast	12 (27.90)
Central-West	3 (6.9)
Southeast	12 (27.90)
South	16 (37.20)
Years of experience	
Less than 1 year	1 (2.32)
From 1 to 3 years	11 (25.58)
From 3 to 5 years	6 (13.95)
From 5 to 10 years	15 (34.88)
More than 10 years	10 (23.25)
Participation of the Brazilian Paralympic Boccia Team	
Yes	5 (11.62)
No	38 (88.37)
Competitive level	
National	26 (60.46)
Regional	17 (39.53)

Table 2. Comparisons of mood states by the main demographic characteristics analyzed.

Comparison groups	Mood states (mean±SD)						
	Stress	Depression	Anger	Vigor	Fatigue	Mental Confusion	TMD
Functional classes							
BC1 (N=8)	18.5±4.63	14.5±2.51	11.3±3.45	26.8±3.49	10.4±2.97	13.3±4.13	141.0±13.7
BC2 (N=12)	19.4±4.52	17.7±9.22	11.2±6.39	26.1±4.91	10.3±4.01	15.0±4.47	147.0±24.3
BC3 (N=11)	19.6±5.99	17.3±6.44	10.9±4.81	24.0±4.45	11.5±6.09	16.1±3.94	151.0±20.8
BC4 (N=11)	22.0±6.00	25.6±10.4[a]	15.3±5.88	23.4±5.61	17.8±6.98[b,c]	17.7±3.98	175.0±32.8[d,e]
Years of experience							
1 to 5 years	20.3±6.02	18.9±9.18	12.4±5.63	24.9±4.39	13.2±6.49	16.6±4.07	156.0±29.1
5 to 10 years	19.2±4.83	18.6±7.64	11.5±4.31	23.5±5.41	11.3±4.95	14.2±3.93	151.0±24.4
> 10 years	20.4±5.02	19.8±10.5	12.6±7.35	27.3±4.00	13.4±6.95	16.1±5.00	155.0±28.7
Competitive level							
Regional	21.8±5.60	21.0±9.43	13.4±5.94	24.0±4.78	14.1±6.12	16.5±4.82	162.0±29.1
National	18.5±4.67[f]	17.5±8.15	11.2±5.13	25.8±4.77	11.3±5.81	15.0±3.80	148.0±23.7[g]
Region of Brazil							
Northeast	19.9±5.62	21.6±10.5	11.9±5.18	24.1±4.66	14.6±7.46	16.3±3.75	159.0±31.0
Southeast and Central-West	21.3±4.34	19.6±9.20	12.0±6.31	25.4±5.57	12.4±4.98	15.3±4.59	155.0±24.5
South	18.7±5.87	16.6±6.72	12.5±5.40	25.3±4.33	11.2±5.73	15.5±4.59	149.0±26.7

Key: TMD, total mood disturbance; [a]significant differences compared to the BC1 group of athletes (ES=1.47); [b,c,d,e]significant differences compared to the BC1 (ES=1.38 and 1.35) and BC2 (ES=1.32 and 0.97) groups of athletes, respectively; [f,g]significant difference compared to the Regional group [f](effect size=0.64), and [g](effect size=0.53).

Table 3. Comparisons of the quality-of-life domains by the demographic characteristics analyzed.

Comparison groups	Quality of life domains				
	Physical Health	Psychological Health	Social relationships	Environment	Total
Functional classes					
BC1 (N=8)	3.95±0.432	4.25±0.453	4.00±0.435	4.05±0.361	16.2±0.646
BC2 (N=12)	3.85±0.622	4.49±0.308	3.87±0.463	3.84±0.503	16.0±1.36
BC3 (N=11)	3.87±0.725	4.36±0.510	4.09±0.701	4.14±0.611	16.5±1.88
BC4 (N=11)	3<46±1.04	3.73±0.999[a]	3.61±0.985	3.46±1.28	14.2±3.77
Years of experience					
1 to 5 years	3.72±0.928	4.29±0.774	3.98±0.576	3.91±1.03	15.9±2.93
5 to 10 years	3.87±0.500	4.16±0.544	3.62±0.765	3.79±0.667	15.4±1.89
> 10 years	3.71±0.754	4.17±0.706	4.10±0.703	3.85±0.535	15.8±2.06
Competitive level					
Regional	3.94±0.888	4.24±0.782	3.93±0.680	3.87±1.08	16.0±2.93
National	3.64±0.601	4.20±0.589	3.85±0.708	3.85±0.511	15.5±1.86
Region of Brazil					
Northeast	3.69±1.00	3.93±0.833	3.53±0.658	3.39±1.24[b]	14.5±3.42
Southeast and Central-West	3.74±0.639	4.16±0.601	4.07±0.523	3.89±0.454	15.8±1.43
South	3.86±0.662	4.49±0.522	3.98±0.783	4.18±0.443	16.5±1.86

Key: [a]significant difference compared to the BC2 group of athletes (Effect size=0.89); [b]Significant difference compared the South region group of athletes (Effect size=0.44).

Northeast and South regions (F=3.817, p=0.030). There were no significant differences in the other domains: physical health (F=0.171, p=0.844), psychological health (F=2.580, p=0.097), personal relationships (F=2.674, p=0.089), and sum of the domains (F=2.570, p=0.089).

DISCUSSION

The objective of the present study was to evaluate the mood state and quality of life of Paralympic boccia players during the COVID-19 pandemic. In addition, we were trying to identify differences in the perceptions of mood and quality of life among the athletes by functional class, competitive level, and region. Our research identified three aspects of mood state that may be being perceived negatively, namely depression, fatigue, and TMD in class BC4 athletes as compared to functional classes BC1 and BC2, which are reserved exclusively for athletes with cerebral palsy. Another noteworthy finding is the lower number of negative factors in the national-level group of athletes as compared to the regional group, especially in the stress subscale and TDM. In general, we continue to observe the "iceberg" profile in the sample studied, except for the class BC4 athletes.

On the other hand, perceptions of the quality of life seemed to remain unchanged during the lockdown, with the exception of class BC4 athletes, who presented negative psychological perceptions compared to class BC2 athletes. Another important finding is in the negative perceptions about the environment domain of athletes from the Northeast region of Brazil compared to athletes from the South region. The maintenance of the "iceberg" profile and the quality-of-life perceptions of the groups studied may reflect positive behaviors assumed during this confinement period. The lack of studies that have investigated the effects of the lockdown on the psychological aspects of Paralympic athletes makes comparisons and associations difficult.

There are recommendations and recent evidence that support some benefit associated with exercising at home.[19] This fact may be evidence of effects of alternative therapies and, above all, of exercise routines performed at home that influence mood adjustments.[20] In this particular case, it is important to note that the institutions responsible for Brazilian Paralympic sports were significantly engaged in ensuring that athletes of the different sports maintained their exercise routines.

Thus, protective behavior and the posting of all these actions on social networks may be influencing the participation of other athletes, although indirectly, to continue exercising at home considering their specific situations and adaptational requirements. In this regard, even though the study sample has only 5 athletes who play on the national team, we understand that the environment of participation on Paralympic boccia teams promotes positive social adjustments for people with disabilities by providing overall benefits to the participants, a fact evidenced in other studies.[21,22]

Within the context of sports, Fortes et al.[23] evaluated 62 young swimmers, and demonstrated an increase in the so-called "iceberg" effect after tapering in the experimental group, making it possible to conclude that tapering is effective in improving the mood state of swimmers, especially for an increase in vigor and decrease in anger, fatigue, and depression. Thus, we can pose the hypothesis that a return to activities for groups with negative moods should include tapering phases in its training protocols, with a reduction in training volume and an increase in the intensity of the proposed activities. In another longitudinal study[24] that sought to contribute pertinent information about the mood state in samples of Paralympic athletes who participated on Brazilian national sports teams, significant variations in mood profiles were confirmed during the season. Several psychobiological variables may change during the sports season, such as low vigor. On the other hand, good sleep quality and high vigor during the pre-competitive season may favor better sports performance in the subsequent phase.

BC1 and BC2 classes are composed of athletes with cerebral palsy, usually with greatly uncoordinated movements arising from excess muscle tonus and involuntary contractions.[6] Our comparative test results demonstrated that these athletes have lower levels of feelings of depression than the other functional classes, with a significant difference between BC2 and BC4 athletes (Table 2). It has been shown that adults with cerebral palsy are at risk for developing depression.[25] However, this information is not yet clearly evidenced when other types of disability are observed, particularly in heterogeneous participation groups like sports teams.

In our study, class BC4 presented worse mood profiles, notably depression, fatigue, and TDM (Table 2). It is noteworthy that this class includes athletes with other types of disabilities, outside of the spectrum of cerebral palsy, and they are quite independent out on the court. Athletes belonging to functional classes BC1 and BC3 are less autonomous, sometimes requiring assistance to position themselves in their wheelchairs or even to shoot the balls. However, these classes presented the lowest negative mood indicators in our study (Table 2). Class BC4 is normally comprised of athletes with deformities, muscular dystrophy, degenerative neurological diseases, and quadriplegia. In and of themselves, these are types of disability that negatively affect locomotion and fatigue more markedly than other types of disability.[26] In addition to this aspect, decreased physical capacity arising from acquired and progressive disabilities can accentuate the process of depression, as well as other negative feelings in these athletes.[27]

In our study, functional class BC4 had lower mood state and quality of life results. Reduced locomotion, resulting from some physical disabilities, combined with decreased social interaction, imposed by the lockdown may explain, at least in part, the negative effects observed in the class BC4 depression and fatigue subscales when compared to the others. Similarly, class BC4 athletes scored lower in the quality-of-life perception psychology domain. They are athletes who compete without assistance and they are able to achieve better physical conditioning results in the club training routines.

These findings may also be related to negative perception effects that are more exacerbated in these athletes by virtue of the substantial reduction in social interaction caused by the lockdown. Furthermore, it should be noted that other quality-of-life aspects were maintained without differences when we compared the selected groups. We speculate that, similarly as with some mood states, continuing to perform physical activities/exercises at home, as did most athletes, may be positively influencing the maintenance of the quality of life perceptions, as seen in earlier studies.[28,29]

Our findings demonstrate that quality of life perceptions related to the environment domain differed significantly among athletes belonging to the Northeast region as compared to athletes from the South region (Table 3). It should be noted that the pandemic advanced at different speeds in the regions of Brazil. Thus, the quality-of-life perception related to the environment during the period when we were collecting responses could be interpreted in different ways by the athletes. Even so, it is known that there is a relationship between some types of disability and socioeconomic conditions,[30] a fact that could influence intrinsically the environmental perceptions of the quality of life in the athletes from the Northeast region of Brazil.

CONCLUSIONS

BC4 class athletes reported worsened feelings of depression, fatigue, and total mood disturbance, as well as worse perceptions of the quality of life in the psychological health domain as compared to the other functional classes. Athletes from the Northeast region had worse quality of life perceptions in the environment domain then athletes from the other regions. These results may be related to differences in functional ability observed among the disabled players, as well as the regional differences observed in the strategies to combat the pandemic.

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