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Quality of life is associated with fatigue among Brazilian professional dancers

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ORIGINAL ARTICLE

ABSTRACT

This cross-sectional study aimed to analyze the relationship between quality of life and levels of fatigue among Brazilian professional dancers. A total of 127 professional classical ballet and contemporary dancers, both male and female, from professional dance companies of the Brazilian South-Southeast region, participated in the study. Data were collected using online self-administered questionnaires, the World Health Organization Quality of Life – Biomedical Research and Education Foundation (WHOQOL – BREF) and the Fatigue Symptom Checklist (FSC), to characterize the participants. Multiple linear regressions were used for data analysis. The results showed that worsened psychological health, social relationships, environment, and total quality of life domains were associated with the drowsiness and dullness scale. Worsened physical health, psychological, and total quality of life domains were also associated with the inability to concentrate scale. However, improvement in social relationships and total quality of life domains were associated with the awareness of physical discomfort scale. These results indicate that fatigue affects the quality of life of professional dancers differently based on the scales used to measure fatigue, which highlights the importance of studies empirically testing specific fatigue-modifying factors in professional dance contexts.

Keywords: dance, professional performance, fatigue, quality of life, work.

INTRODUCTION

Having started their careers in childhood and facing expectations to meet predetermined aesthetic standards (Bolling & Pinheiro, 2010), professional dancers are subjected to highly demanding training on a daily basis, which exposes them to possible injuries, pain, and fatigue (Dore & Guerra, 2007). Training schedules and the intensity of training sessions, rehearsals and shows are defined by the directors of professional dance companies (De Almeida & Flores-Pereira, 2013). Due to this intense training, professional dancers are able to interpret, perform, and incorporate movements to achieve perfection, regardless of physical pain (De Almeida & Flores-Pereira, 2013; Neves, 2013; Jacobs et al., 2016). Furthermore, they are required to have adaptable bodies and technical perfection, as well as to easily transition between different dance modalities, such as classical ballet and contemporary dance (Segnini & Lancman, 2011; De Almeida & Flores-Pereira, 2013).

Professional dancers are workers with a high pain tolerance threshold (Dore & Guerra, 2007), requiring great memory and technique to perform choreographies (Leite, Mello, Dáttilo, & Antunes, 2011) and daily technical training sessions (Kuwae & Silva, 2007); however, no consensus on the necessary number of training hours has been established, and the reported data ranges from 3 to 6 hours (Kuwae & Silva, 2007) and from 8 to 10 hours (Picon & Franchi, 2007). Moreover, according to the Brazilian Classification of Occupations (Classificação Brasileira de Ocupações – CBO) of the Ministry of Labor and Employment (Ministério do Trabalho e Emprego; CBO, 2002), the role of the professional dancer consists of preparing the

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body, researching movements, and rehearsing choreographies, among other functions.

To maintain the fitness and technical skills required for their profession, professional dancers must endure a training routine involving memorization, repetition, and execution of their own dance moves (Neves, 2013), wherein injured, tired and sore bodies become routine aspect of their work (De Almeida & Flores-Pereira, 2013). These professionals are used to performing intense movements in a state of fatigue, which leads to routine training in situations of fatigue in order to develop the necessary fitness for dance (Mceldowney, Hopper, Etlin-Stein, & Redding, 2013). Furthermore, the length and intensity of dance sequences differ between training sessions and performances according to the schedule of each company, which may lead to physical and psychological problems (Da Silva & Enumo, 2016), including fatigue (Liederbach, Kremenic, Orishimo, Pappas, & Hagins, 2014). Fatigue is caused by cumulative or prolonged training activities, which can lead to injuries (Liederbach et al., 2014).

In addition to the long and heavy daily routine (Liederbach et al., 2014), dancers must cope with stress and pre-performance anxiety before shows (Adam, Brassington, Steiner, & Matheson, 2004; Bolling & Pinheiro, 2010). Under the pressure to achieve specific goals, they may introduce drastic changes in their diet (Brown, Howatson, Quin, Redding, & Stevenson, 2017), medication use and lengthen the workday, which may affect sleep and, therefore, the quality of life of professional dancers (Fietze et al., 2009). It should be noted that professional dancers include other activities in their daily routines, in addition to dancing (Batista & Martins, 2010; Macedo & Vieira, 2007), which complement their physical training, including strength training, Pilates (Kuwae & Silva, 2007), and walking (Macedo & Vieira, 2007); however, in excess or without guidance, these activities can lead to anxiety, stress and pain, among other problems (Dore & Guerra, 2007), impairing quality of life rather than helping these professionals.

Considering the above and that fatigue is related to physical variables that may facilitate the occurrence of injuries (Mceldoney et al., 2013) or generate postural adaptations for professional performance, studying the relationship between quality of life and fatigue could indicate some strategies to improve dance training and generate scientific data on this population, thereby contributing knowledge to the academic and dance communities. Accordingly, the present study aimed to analyze the relationship between quality of life and levels of fatigue among Brazilian professional dancers.

METHOD

This cross-sectional study, approved by the Human Research Ethics Committee of Santa Catarina State University (Universidade do Estado de Santa Catarina – UDESC; Number 1.152.774) on July 17, 2015, consisted of an intentional, non-probabilistic sample of 127 professional classical ballet (n = 37) and contemporary (n = 90) dancers, both male and female, with a mean age of 29.57 ± 8.9 years, from Brazilian professional dance companies.

Professional dancers over 18 years of age, who were paid to dance by their dance company and who signed the informed consent form and adequately filled out the entire study questionnaire were included in the sample.

Professional dance companies were selected by convenience using Brazilian regions with the highest concentration of companies, more specifically, the South-Southeast axis (states: Minas Gerais, Rio de Janeiro, Rio Grande do Sul and São Paulo). Companies were initially contacted by telephone, email, mail and through social networks, using their contact information available online. The link to the online questionnaire was only sent to the professional dancers following consent from the directors and choreographers of the dance companies, who, in some cases, requested on-site data collection using paper questionnaires. Therefore, 70 questionnaires were answered using the online link, and 57 using the paper questionnaires.

Regarding sample loss, the total number of dancers lost could not be determined because of the 64 professional companies contacted, only 31 reported the number of members in the dance company (n = 397 dancers). Therefore, only

professional dancers from the lists provided by the dance companies were contacted, reducing the scope of the study and resulting in a final sample size of 127 professional dancers.

The following variables were used to characterize the sample: age (years), sex (female, male), marital status (with or without partner), practice of physical activity other than dance (yes or no), type of physical activity practiced (strength training or sports in general).

Quality of life was assessed using the abbreviated World Health Organization Quality of Life – Biomedical Research and Education Foundation (WHOQOL – BREF) questionnaire, which was adapted for Brazilian Portuguese by Fleck et al. (2000). This questionnaire consists of 26 of the 100 questions from the original WHOQOL questionnaire. Participants were asked to respond based on their experiences within the last two weeks and their answers were scored on a scale of intensity (not at all – extremely), ability (not at all – completely), frequency (never – always), or satisfaction (very dissatisfied – very satisfied; very poor – very good). Responses were tallied into scores ranging from 0 to 100%, with a higher percentage reflecting better quality of life. The questionnaire included 24 questions, that encompassed the following domains: (1) physical health (physical pain; energy; mobility; activities of daily living; dependence on medical substances and medical aids; work capacity), (2) psychological (positive feelings; thinking, learning, memory, and concentration; self-esteem; bodily image and appearance; negative feelings; spirituality/religion/personal beliefs), (3) social relationships (personal relationships; social support; sexual activity), (4) environment (freedom, physical safety and security; home environment; financial resources; health and social care: accessibility and quality; opportunities for acquiring new information and skills; participation in and opportunities for recreation/leisure activities; physical environment (pollution/noise/traffic/climate); transport) and two more general questions about quality of life.

Fatigue was assessed using the Fatigue Symptom Checklist (FSC) developed by Yoshitake and translated into Brazilian Portuguese by Fischer et al. (1991). The questionnaire consists of 30 multiple-choice questions divided into 3 assessment scales: drowsiness and dullness, inability to concentrate, and awareness of physical discomfort. Each fatigue scale has a score ranging from 10 to 50 points, and a final overall score may also be calculated by adding the scores from the 3 scales. The higher the score is, the higher the fatigue is (Welle, 2008). This questionnaire is used to assess fatigue among workers and is, therefore, suitable for the sample of this study.

Statistical analysis

Descriptive analysis of the sample was performed (frequency, mean, and standard deviation), in addition to multiple linear regressions in each domain to assess the relationship between the quality of life domains and fatigue scales. The statistical package SPSS version 20.0 (Armonk, NY: IBM Corp.) was used for all tests, and the adopted significance level was 5%.

RESULTS

One hundred and twenty-seven professional classical ballet (27.4%) and contemporary (72.6%) dancers, which were mostly female (58.3%), participated in this study. 57.5% of them had no partner when the data were collected and 64.2% practiced some type of physical activity in addition to dance, primarily strength training (70.1%; data not shown).

Table 1 outlines the associations between the psychological, social relationships, environment and total quality of life domains and the drowsiness and dullness scale. The domains showed a predicted decreased of 0.456 (p = 0.021), 0.991 (p = 0.015), 0.749 (p = 0.038) and 0.657 (p = 0.005) for each score of the aforementioned fatigue scale, respectively.

Table 1 also outlines the association between the physical health, psychological, and total quality of life domains and the inability to concentrate scale. The domains showed a predicted increase of 0.468 (p = 0.049), 0.482 (p = 0.027), 0.513 (p = 0.025) for each score of the aforementioned fatigue scale, respectively.

Furthermore, the results showed an association between the social relationships and total quality of life domains and the awareness of physical discomfort scale. The domains showed a predicted increase of 0.954 (p = 0.013) and 0.479 (p = 0.028) for each score of the aforementioned fatigue scale, respectively (Table 1).

Table 1
Associations between quality of life and fatigue categories (n = 127). Brazil, 2016

	PHY.D.		PSYCHOL.D.		SOC.D.		ENV.D.		TOTAL QoL	
	B (Ep)	p-value	B (Ep)	p-value	B (Ep)	p-value	B (Ep)	p-value	B (Ep)	p-value
FAT DD.	-0.436(0.239)	0.070	-0.482(0.206)	**0.021**	-0.991(0.402)	**0.015**	-0.749(0.357)	**0.038**	-0.657(0.229)	**0.005**
FAT CONC.	-0.468(0.235)	**0.049**	-0.456(0.203)	**0.027**	-0.730(0.396)	0.067	-0.488(0.351)	0.167	-0.513(0.226)	**0.025**
FAT AWA.	0.184(0.225)	0.417	0.290(0.194)	0.138	0.954(0.379)	**0.013**	0.519(0.337)	0.126	0.479(0.216)	**0.028**
	R^2		**R^2**		**R^2**		**R^2**		**R^2**	
	0.112		0.144		0.109		0.074		0.166	

Note. PHY.D. = Physical health domain of Quality of Life; PSYCHOL.D. = Psychological domain of Quality of Life; SOC.D. = Social relationships domain of Quality of Life; ENV.D. = Environment domain of Quality of Life; TOTAL QoL = Total Quality of Life; FAT = FATIGUE; FAT DD. = Drowsiness and dullness; FAT CONC. = inability to concentrate; FAD AWA. = Awareness of physical discomfort. B(Ep) = non-standardized coefficient (standard error). R^2 = coefficient of determination adjusted for all fatigue categories.

DISCUSSION

The present study found a relationship between quality of life and levels of fatigue among Brazilian professional dancers, as was proposed in its objective. The results showed that worsened psychological, social relationships, environment, and total quality of life domains were associated with the drowsiness and dullness scale indicating that this fatigue category is linked to both physical and mental fatigue ("ideas are unclear," "I am sleepy," "tired head," "weakness"). These findings may be directly linked to the component of daily living "sleep" among professional dancers who lack good-quality sleep, are unable to concentrate and feel weak.

Accordingly, a study conducted with professional classical ballet dancers reported that those who had poor sleep quality also had lower quality of life scores in the mental health component (Fietze et al., 2009). Furthermore, the same authors stated that the increase in the number of daily work hours before premieres affects the sleep-wakefulness cycle of these professionals (Fietze et al., 2009). Therefore, psychological problems (depression, anxiety, and poor sleep) are associated with decreased concentrations, inadequate nutrition, and fatigue, among other problems (Adam et al., 2004).

The current study showed that worsened physical health, psychological, and total quality of life domains were associated with the inability to concentrate scale. This fatigue category is related to concentration and concerns that affect work, as well as fitness requirements for work and tiredness, albeit without discontinuing work. Therefore, a hypothesis for this association is related to the internalized physical characteristics of dance modalities, which advocate lean bodies and encourage these professionals to follow specific dietary restrictions (Hidayah & Bariah, 2011).

In the same context, a study on contemporary dancers found that they have an energy-balance deficit; that is, during the period of training and classes, these dancers consume less than the necessary quantity of energy substrates (Brown et al., 2017). If dancers also adopt inappropriate weight loss methods, their psychological domain may be directly affected, resulting in an obsessive fear of body changes (Hidayah & Bariah, 2011).

Another hypothesis for this association with the inability to concentrate scale would be linked to negative feelings. Accordingly, a literature review found that professional dancers are often concerned with the possibility of injury, leave, and retirement (Bolling & Pinheiro, 2010), and that these negative feelings, here emphasized as fear of early retirement, may cause some contradictory feelings among professional dancers, impairing their concentration on the work routine.

Another factor possibly linked to this association is the fear of losing the position in the dance company, which may cause stress and sleep disorders among professional dancers (Adam et al., 2004). Age and seeking higher wages are also important determinants that influence if dancers stay in dance companies (Teixeira, 2011). Turner and Wainwright (2004) discuss this topic, emphasizing that professional dancing is a short career and that social relationships play a key role in determining when to retire and leave the stage.

Studies have shown that social support and a higher number of sleep hours help decrease the occurrence of injuries among professional dancers (Adam et al., 2004). Accordingly, the present study showed that improved social relationships and total quality of life domains were associated with the awareness of physical discomfort scale. Because the last fatigue category is related to physical tiredness (pain, dizziness, feeling sick...), support from family, friends, and co-workers may also ease the physical symptoms of fatigue. It should be noted that fatigue is commonly found in the daily routine of professional dancers (De Almeida & Flores-Pereira, 2013; Mceldowney et al., 2013). Therefore, interpersonal relations within the dance environment, particularly peer competition, could stimulate overachievement. Thus, physical fatigue (pain, discomfort, and tiredness) would not be an obstacle to continue dancing, but rather an incentive to conquer their place within the dance company.

Accordingly, Neves (2013) discusses in her study that resilience, persistence, and competitiveness are determining qualities for continuing to work as a professional dancer. When reaching more challenging roles within dance companies, such as soloists or first dancers, these professional dancers tend to push harder to dance, even if injured (Jacobs et al., 2016), because they reached the position they always wanted.

CONCLUSION

Lastly, fatigue apparently affects the quality of life of these professional dancers, and drowsiness and dullness as well as the inability to concentrate are associated with worsened quality of life. In contrast, awareness of physical discomfort is associated with improved quality of life when associated with the social relationships' domain. Therefore, empirical studies should be conducted to assess the causes and effects of the associations between these variables.

The limitations of this study include the two methods of data collection, as previously explained in the method section. Although ideally only one method of data collection should have been used, data were also collected in person (using paper questionnaires), at the request of some company directors, to avoid a larger sample loss.

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