

HEALTH-RELATED QUALITY OF LIFE OF PUPIL-ATHLETES FROM SOUTHERN BRAZIL: A CROSS-SECTIONAL STUDY

Guilherme Alves Grubertt*

Physical Education, Federal Institute of Education, Science and Technology of Mato Grosso do Sul, José Tadao Arima, 222, 79200-000, Aquidauana, Brazil**Abstract**

Participation in sport has been associated with positive repercussions in the health, education, and psychosocial outcomes among adolescents. Pupil-athletes are characterized by being at a significant developmental stage marked by physical, psychological, and social changes. However, no study until now has assessed the health-related quality of life of Brazilian pupil-athletes. This study aimed to assess the HRQoL of pupil-athletes from southern Brazil. The KIDSCREEN-52 Questionnaire was completed by 2201 pupil-athletes aged between 12 and 17 (M age = 14.2, SD = 1.5). Over 70% of participants reported high levels of global HRQoL. Boys presented more positive values for Physical Well-Being and Self-Perception. While girls showed significantly higher values for Social Support & Peers. Global HRQoL presented more positive values when associated with older pupil-athletes regardless of gender. This is the first study to measure HRQoL in Brazilian pupil-athletes using the KIDSCREEN-52 instrument. Participation in sports programs can fill several gaps for young people, providing positive examples to pupil-athletes, as they influence affection, perception of stress, physical health, and life satisfaction.

Keywords: Adolescence. Well-being. Youth sport

Introduction

The first contact with extracurricular activities occurs at school age, such as music clubs, vocational programs, and/or the arts at religious groups. However, sport remains one of the most popular organized activities for young people in several countries. The results of recent research revealed that 80% of schoolchildren aged 12 to 14 in Australia (Australian Sport Commission, 2016), 39.3% of schoolchildren aged 13 to 17 in the United States (The Aspen Institute, 2016), 45% of English children and young people (Sport England, 2021), and 77% of Canadians aged between 5 and 19 years (Canadian Fitness and Lifestyle Research Institute, 2019) participated in some form of organized sport. In Brazil, 67.3% of young people play sports or report practicing physical activity (Brasil, 2016).

From this perspective, it is possible to identify the student-athlete, a specific population that can be characterized by the two social attributions linked to the individual. The union of these fields results in the intersection of two scenarios that have a common goal: possibilities for a promising future, since the domains that are important in different stages of life, such as assuming a role in society, guaranteeing a satisfactory income, and developing an identity and a partnership relationship are directly associated with the support provided by these two scenarios (Cross & Fouke, 2019).

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*Corresponding Author: Guilherme Alves Grubertt, Physical Education, Federal Institute of Education, Science and Technology of Mato Grosso do Sul, José Tadao Arima, 222, 79200-000, Aquidauana, Brazil

Correo-e: guilherme.grubertt@ifms.edu.br

In short, the student-athlete is primarily inserted in a sport training activity related to different levels of competitiveness (local, regional, national, and international) projecting a possible professionalization or just development of biopsychosocial aspects; concomitantly, the student-athlete develops their schooling. This dual career must be characterized by a successful combination of education, training, or work with sport, which allows the individual to reach their full potential in life. In this context, there are definitions based on the level of education of this public. A student-athlete is an athlete recognized by an elite sport organization and registered as a student in a higher education institution. A pupil-athlete is an athlete recognized by an elite sport organization and registered as a pupil in secondary education institution (Wylleman et al., 2016).

Sports practices can have positive repercussions in the spheres of health, education, and work, in various age groups. In this sense, a conceptual model of health through sport for children and adolescents was developed precisely because of the scarcity of conceptual structures that associated sport and the biopsychosocial benefits (Eime, Young, et al., 2013). The model includes three main elements: determinants of participation in sport (public policy and environmental, organizational, interpersonal, and intrapersonal factors), sport itself (individual/collective and organized/informal), and health outcomes from sports participation (physical, psychological, and social). In general, research that intends to assess the impact of sports practice on the biopsychosocial aspects of the population involves quality of life (QoL), as there is a need for measures of results that do not mainly reflect the biomedical model and emphasize the relationship between physical and mental health.

In a holistic view, the concept of QoL is multidimensional and presents a complex and dynamic organization of its individual and socio-environmental components that characterize the conditions in which the human being lives (Nahas, 2006). The QoL group of the World Health Organization ("The World Health Organization Quality of Life Assessment (WHOQOL): Development and General Psychometric Properties," 1998) defines QoL as the individual's perception of their position in life, in the context of their culture, and value system in which they live and in relation to their objects, expectations, patterns, and concerns. Health-related quality of life (HRQoL) is a subset of quality of life (Gu et al., 2016) which in the definition of health of the World Health Organization, involves three central elements, namely: physical, mental, and social well-being ("The World Health Organization Quality of Life

Assessment (WHOQOL): Development and General Psychometric Properties," 1998; Williams et al., 2005).

In the last decades, the growing interest in the health-related quality of life (HRQoL) of the young population is represented by the priority of the theme in several countries, mainly by international institutions that promote research engaged in investigations related to public health (Brasil/Ministério da Saúde, 2010). This interest is certainly due to the strong interaction that the quality of life of this population group has in the repercussion on adult life (Rajmil et al., 2006), the possibility of identifying different levels of physical, psychological, and social well-being (Ottova et al., 2012), and the limited likelihood of detecting disease (Spengler & Woll, 2013).

From the information related to HRQoL, there is qualified theoretical support for the elaboration of more efficient interventions that assist in changing the scenario of physical inactivity today (Haraldstad et al., 2017). Simões (2009) pointed out that games and competitions are fundamental for the physical, cognitive, affective, and behavioral development of pupil-athletes. Given the above, the objective of this study was to evaluate the HRQoL of pupil-athletes participating in the final stage of the Paraná School Games edition 2018, considering sex and time of sports practice.

Methods

The reference population for the present study is the pupil-athlete members of the final stage of the Paraná 2018 School Games phases A (15 to 17 years of age) and B (up to 14 years of age). Those responsible were informed about the nature, objectives, and procedures of the study and signed a Free and Informed Consent Form and a Free and Informed Assent Form allowing the pupil-athletes to participate in the research. Ratified by the free and informed consent term, 2201 pupil-athletes (1126 girls and 1075 boys) agreed to participate in the present study. For the preparation of this study, a database was used, which was supported by the cross-sectional research project entitled "Physical capacities of young people practicing different sports: relationship between psychosocial dimensions and somatic maturation". This project was approved by the Research Ethics Committee of the State University of Londrina according to the rules of Resolution 196/96 of the National Health Council on research involving human beings, opinion n° CEP/UEL 007/2014.

Thus, the inclusion criteria were the participation of pupil-athletes in the event and the signing of the free and informed consent term. The exclusion criteria were the incomplete filling in of the questionnaires and the non-signing of the free and informed consent term and the free and informed assent term. Data collection was carried out in the athlete's social center with tables and chairs made available by the coordination of the games.

Data related to HRQoL were obtained using the KIDSCREEN-52 questionnaire. This instrument was validated, translated, and cross-culturally adapted with satisfactory psychometric quality, thus enabling its use in studies with the Brazilian population (Guedes & Guedes, 2011). In general, it consists of 52 questions directed to the perception of ten dimensions of HRQoL: Dimension 1 - Physical Well-Being, Dimension 2 - Psychological Well-being, Dimension 3 - Moods & Emotions, Dimension 4 - Self-Perception, Dimension 5 - Autonomy, Dimension 6 - Parent Relations & Home Life, Dimension 7 - Financial Resources, Dimension 8 - Social Support & Peers, Dimension 9 - School Environment, and Dimension 10 - Social Acceptance (Bullying).

The answers to the questions are formatted on a Likert scale of one to five points, which seeks to identify the frequency of behaviors/feelings or, in some cases, the intensity of specific attitudes, with a recall period of one week prior to the application of the questionnaire. The final scores equivalent to each dimension are recoded on a measurement scale ranging from zero to 100. The instruments were applied individually to each pupil-athlete by researchers and undergraduate students at the athlete's community center, in order to avoid pre- or post-competition stress situations. Each evaluator delivered the questionnaire to each pupil-athlete providing instructions for correct completion.

For data analysis, the Kolmogorov-Smirnov test was initially applied to verify the hypothesis of normality of the data. After detecting the violation of the normality hypothesis, the results are presented in median and interquartile range. The Mann Whitney U Test was applied to compare dimensions between girls and boys. The comparison between the practice time of the pupil-athletes was performed using the Kruskal-Wallis test with Dunn's post hoc multiple comparison. The data were analyzed using the SPSS version 20.0 statistical package. The results followed a level of significance of $p < 0.05$.

Results

The characteristics of pupil-athletes referring to the competition phase in which they participated, in addition to the age and training time are described in table 1. Some information was not used in the data analysis, for example, the categorization by type of modality, subdivided into collective and individual sport. The individual modalities evaluated were: athletics, badminton, cycling, rhythmic gymnastics, judo, Olympic wrestling, swimming, shuttlecock, skateboard, taekwondo, table tennis, and chess. The collective modalities evaluated were: basketball, soccer, futsal, handball, volleyball, and beach volleyball. Within the individual modalities, a higher proportion was observed in athletics (15.2%), followed by chess (7.5%), judo (2.8%), beach volleyball (2.3%), table tennis (2.2%), and badminton (2.2%), respectively. For the collective modalities, the largest proportion was futsal (18.3%), followed by volleyball (17.8%), handball (16.9%), and basketball (11.3%), respectively.

The values found are considered positive for the age group investigated, that is, it is possible to associate the data found with a positive perception of well-being. However, it is worth mentioning the high values found corresponding to the attributes related to negative feelings, reduced cognitive ability, and difficulty in relationships in the school environment, contesting the results of many studies that supported the literature review in this study.

When evaluating the dimensions of pupil-athletes considering sex (table 2), the boys presented significantly higher values for the dimensions Physical Well-Being, Self-Perception. That is, issues associated with the level of physical activity; willingness to perform energetic activities, and how safe and satisfied the pupil-athlete feels about themselves; as well as their appearance were more positive for the boys. The girls, on the other hand, showed significantly higher values for the Social Support & Peers dimension. In other words, questions regarding the quality of the interaction between the pupil-athlete and their peers, as well as their perceived support and social relationships with other individuals, inserted or not in their context, showed more positive values for the girls.

When comparing the dimensions of HRQoL with the practice time of pupil-athletes (table 3), it was found that 50% of the dimensions presented a significant association ($p \leq 0.03$). The categorization performed for this analysis was divided into three groups: up to 1 year, between 1 and 3 years, and over 3 years of practice. Of all the dimensions proposed by the construct, Physical Well-Being, Autonomy, Social Acceptance (Bullying), Moods & Emotions, and Self-Perception showed significant differences. In the dimensions Physical Well-Being, Autonomy, Social Acceptance (Bullying), although the indices of central tendency and dispersion showed similar results, it was found in the comparison of average rankings that the group above 3 years of practice

showed more positive values when compared to the group between 1 and 3 years of practice.

Moods & Emotions dimension for the group over 3 years of practice showed higher values when compared to the other groups. For the Self-Perception dimension, the central tendency and dispersion indices also showed similar results. However, in the analysis of comparisons of average rankings, more positive values were found for the group with above 3 years of practice when compared to the other groups.

Discussion

Even without using the sports modalities in the treatment of the data, it is important to discuss the information in the literature on this theme, mainly due to the way the stratification of sports modalities is carried out in most studies, since some studies, such as the current one, presented only the description of the investigated modalities or divided them into collective *versus* individual or indoor *versus* outdoor sports (Moeijes, Van Busschbach, et al., 2019), practicing or not practicing sports during school hours (Pacífico et al., 2020), and even active sport and non-active sport (Gonçalves Galdino da Costa et al., 2020).

The justification for not using the stratifications of sports modalities for the analyses of the current study was the focus on the investigation of HRQoL among participating boys and girls, since there is numerous similar evidence of the attributes of HRQoL most valued by practitioners of collective and individual modalities, respectively, mainly with dimensions related to mental health (Cho et al., 2020; Gagliardi et al., 2020). In addition, the division by sex was considered to be highlighted by the fact that it presents a relevant counterpoint in relation to the literature. The number of girls ($n=1126$) participating in this study and, consequently, in sports competitions, was greater than the number of boys ($n=1075$).

According to Dawes, Vest and Simpkins (Dawes et al., 2014), boys are more likely than girls to present more consistent reasons for sports, so the male participation rate will be higher. However, Meade and Dowswell (Meade & Dowswell, 2016) identified that changes in several psychometric dimensions occur during adolescence, and there is still an apparent sex influence on the outcome of HRQoL during the adolescent trajectory, where girls report lower global health values compared to boys.

This outcome could serve as support for some research, mainly due to the mean age of the participants (14.2 ± 1.5), as there is a significant difference in the dimensions of HRQoL for girls and boys with advancing age, due to several factors. However, we highlight here that one of the main factors that influences this outcome, is puberty (Michel et al., 2009). This period is where the adolescent feels extreme difficulty in dealing with the environment in which they find themselves and there are still oscillations that pass through all dimensions of HRQoL. According to Haraldstad et al. (2017), in the school-sports context, girls are often more impacted by the negative changes in the dimensions of HRQoL during adolescence.

Another singular result of this study was the fact that boys considered themselves to be more physically active / healthier and more comfortable with their appearance when compared to girls. However, these outcomes did not help them to feel accepted and that they belong to social groups (Social Support & Peers dimension more positive for girls). That is, the boys' self-perception did not guarantee complete acceptance or belonging to social groups. For girls, this acceptance or belonging index was independent of the values of self-perception. These values are contradictory when we analyze research involving sex issues and the youth sports context (Eime, Harvey, et al., 2013). The factor that could explain this contradiction is the pace of globalization of sport, cultural ideas, and practices that over the past 20 years have accelerated excessively for everyone involved in the sporting context.

Some international studies that investigated the sports participation of children and adolescents together with HRQoL, or other associative variables, used instruments to quantify the frequency and regularity of the practice of sport and whether the training took place in sports clubs. This quantification was reported by the parents or by the young person (Moeijes, van Busschbach, et al., 2019; Vella et al., 2017). This information becomes necessary because the pupil-athletes participating in the current study did not complete any instrument similar to those used in other surveys as they were involved in the final stage of the competition. Thus, although the mean age of pupil-athletes in this research is relatively low, it is possible to attribute a satisfactory level of experience to the discussion about the time of practice and the dimensions of the HRQoL.

The most positive values of HRQoL of the pupil-athletes were associated with a longer time of involvement with sports, regardless of sex, age group, and modality, mainly in the dimensions related to mental health. This result corroborates the health model through sport (Eime, Young, et al., 2013) which suggests that the relationship between sports and mental health in adolescents is largely bidirectional in nature and does not differ by type of sport (individual/

team) or sex. Likewise, this directly proportional outcome of the dimensions of HRQoL and time of practice represents the fact that there may be interactions between physical and psychological aspects and between psychological and social health aspects in the health model through sport.

Despite the cross-cultural adaptation and validation of the instrument for use in the Brazilian population, the results may be under or overestimated due to the self-reported nature of the construct. In addition, there is a difficulty in generalizing the results to Brazilian pupil-athletes. First, because Brazil has a continental proportion and each region has its social peculiarities within the sports context, and second, because the sample participating in this study was related to the final stage of the competition. Specifically in the state of Paraná, school games include regional, macro-regional, and final stages.

In this sense, school sports are effective with regard to the participation of practically the entire school community in the state in official competitions. This fact makes the Paraná School Games considered one of the biggest student competitions in Latin America. However, due to the funneling of school competitions, the final stage can be characterized by the presence of more outstanding pupil-athletes. Another limiting factor is the descriptive character and the cross-sectional design used in this research. Future research with Brazilian pupil-athletes is suggested, supported by a longitudinal methodology, especially at school age (high school) or in the transition to the next educational stage, since it is already well evidenced that there are positive reflections in adult life from a physically active life during adolescence (Vella et al., 2017).

Despite the limitations, our study has several notable strengths, including the large sample size. Considering that approximately 4 thousand pupil-athletes participated in the final stage of the competition, the present research evaluated more than half of the target population. Additionally, the number of girls was relatively higher than boys, which could contribute to greater visibility of the female sex in the sporting context at all levels (school, university, and professional), which is still underrepresented in the current literature.

Furthermore, according to Kavoura et al. (2018), research with children and adolescents in the sports context can help to determine how and at what age female biopsychosocial inferiority beliefs begin to emerge. Finally, the specific population evaluated, the pupil-athlete, intensifies the value of the universe of Brazilian school sports, since it can become a standard of social reality in the sporting life of these young people and many psychosocial and institutional factors may be evident.

Conclusion

In summary, the pupil-athletes participating in this study reported a satisfactory level of HRQoL. Despite this, it is worth noting that the lowest values identified correspond to the negative feelings associated with mood (Moods & Emotions), the school scenario in general (School Environment), and the monetary situation that offers the opportunity to live alongside their peers (Financial Resources). In most cases, professionals in the sports context are unable to reach pupil-athletes with these negative feelings, so it is important to highlight these values with a view to the positive development of these young people in vulnerable situations. Also, these values related to the school context can be useful to assist regional and national entities responsible for the schooling of athletes or the management of dual careers, as this theme is already part of the policy guide for schooling and sport systems in several countries in Asia, the USA, Canada, and Australia.

The global HRQoL of pupil-athletes showed more positive values when associated with longer sports practice. Participation in sports programs can fill several gaps for young people, offering pupil-athletes positive examples, as they influence affection, the perception of stress, physical health, and life satisfaction. With the information collected in this study, coupled with the systematic basis of specific strategies in the sports context, better results for pupil-athletes are possible from a biopsychosocial aspect, enabling extrapolation of these values to non-sports scenarios with repercussions in their future life.

Declaration of interest statement

The authors declare that there is no conflict of interest.

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