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Cross-sectional study of the quality of life and functional disability report in young basketball athletes – a pilot study

Estudo transversal da qualidade de vida e relato de incapacidade funcional em jovens atletas de basquetebol – estudo piloto.

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Abstract

Introduction: With the increasing number of young athletes within a competitive scenario the onset of traumatic and non-traumatic injuries also increases, causing pain, dysfunction, and changes in the quality of life of these young competitors. **Objective:** The goal of this pilot study was to identify the domains (components) of the quality of life questionnaire of these athletes and also to evaluate whether a degree of functional disability was present. **Volunteers:** Twelve 16-year-old male volunteers participated in this research. **Material and Method:** Data collection occurred during the pre-season practices, through the application of the Brazilian Portuguese translated version of Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), and the Oswestry Functional Disability questionnaire. This procedure was redone after 8 weeks, where the young athletes were already engaged into competition. **Results:** There was no statistically significant alterations ($p \leq 0,05$) considering the overall quality of life observed for the entire team, though the scores altered in most of the domains of the questionnaire. Also, the functional disability degree remained minimal throughout the competition for the sample selected.

Key words: Basketball; Children; Functional disability; Quality of life.

Resumo

Introdução: Com o aumento da participação de jovens atletas em ambientes competitivos ha também um aumento nas ocorrências de lesões traumáticas e não-traumáticas, gerando dor, disfunção, e alterações na qualidade de vida desses jovens competidores. **Objetivo:** O objetivo desse estudo piloto foi identificar os domínios (componentes) do questionário de qualidade de vida desses atletas e avaliar se houve também algum nível de incapacidade funcional. **Voluntários:** Participaram dessa pesquisa 12 voluntários do sexo masculino com 16 anos de idade. **Materiais e Método:** Coleta de dados ocorreu durante os treinos da pré-temporada com a versão traduzida para o Português do questionário Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) e do questionário Oswestry de Incapacidade Funcional. Esse procedimento foi repetido apos oito semanas, onde os jovens atletas se encontravam engajados em competições oficiais. **Resultados:** Considerando a qualidade de vida do time como um todo, não foram observadas alterações estatisticamente significativas ($p \leq 0,05$) embora os valores apresentassem alterações em quase todos os domínios do questionário. O nível de incapacidade funcional permaneceu mínimo durante a competição na amostra de atletas utilizada.

Descritores: Basquetebol; Crianças; Incapacidade funcional; Qualidade de vida.

Introduction

Although there is opportunity for motor control improvement in the athletic realm, athletes are exposed to great risks of injuries when engaged in athletic competition. As seen in the literature, with the opportunity of action there is an increased opportunity for injury¹. There are physical and physiological differences between the organisms of children and adults, which make children more vulnerable to injuries². According to Maffulli & Bruns³, great alterations occur in the skeletal system of children to allow them to adapt to intense sports training, and many children are now becoming injured when participating in intense physical activities in the United States⁴.

Analyzing the data collected by the *National Safe Kids Campaign*, 20% of all the children engaged in sport activities in the United States injure themselves⁵. Even though traumatic injuries draw bigger attentions, microlesions due to repetitive movements (overuse) are constant in these athletes. Recent studies indicate that 30% to 50% of all pediatric injuries related to sports are referred to overuse injuries⁶. These non-traumatic injuries, common to the adult athletic population, are now observed in pre-adolescent athletes as well⁷.

Basketball and American Football are the sports responsible for the greater incidence of injuries in young male athletes in 6 different European countries⁸. Also, according to the study performed by Taylor and Attia⁹, Basketball presented the higher prevalence of injuries among young athletes with the average of 13 years old among 6 different sports.

Literature is scarce regarding the study here mentioned. One study was conducted with male professional basketball athletes during the 2002 Brazilian national tournament¹⁰. According to the authors, injuries involving the lower extremity were more frequent than injuries to the upper extremity, with a higher prevalence of non-traumatic over traumatic injuries. However, such research was conducted with older athletes

playing in a professional league, differently from the research here performed.

Objective

The purpose of the present study was to assess the quality of life of young Basketball athletes during pre-season practices and during the tournament, along with assessing whether a degree of disability was present due to the intense level of training and games.

Subjects

In this pilot study, twelve male athletes volunteered to participate. The volunteers resided in the city of Mogi das Cruzes, Sao Paulo, and were engaged in the 16-year-old State Basketball Championship playing for a private school located in Mogi das Cruzes, Sao Paulo. The athlete's average height was 1.82 meters, with weight average of 74.08 kg. As exclusion criteria athletes who do not belong to this age level category and female athletes did not participate in this research. The athletes should solely be engaged in the Basketball State Tournament. After selecting the volunteers, a Letter of Formal Consent regarding their participation on this study was signed.

Material

To accomplish this study, the Brazilian Portuguese translated version of Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) and the Functional Disability questionnaire (Oswestry) were administered.

The SF-36 questionnaire is made of 36 items, in which 8 components are related to functional capability, physical aspects, state of general health, pain, vitality, social aspects, emotional aspects, and mental health. The final score is measured between zero and 100,

with zero corresponding to the lowest state of general health, and 100 representing the best health state². It is important to mention that this questionnaire do not indicate the ideal score a person should attain; however, it demonstrates whether the patient/subject has a good or bad state of health¹¹ at that specific moment in time.

Functional disability is also of great concern when considering the general health of an individual. The Oswestry Functional Disability questionnaire is proven to have sufficient reliability and scale width to be applied with clinical measures¹². This questionnaire is composed of 10 questions concerning: pain intensity (mild, moderate, or severe pain); personal care, addressing the individual's lifestyle and how the pain affects the ability of taking care of him/herself; lifting (ability to lift heavy or light-weight objects); reading, headache, and concentration, addressing possible concussion type of injuries; work (pain influence on job productivity); and driving, sleeping, and recreation, which provides information about one's ability to manage daily tasks and recreational activities¹³.

Each question is weighted 5 points, and the total disability score for this questionnaire is 100 (100%). The results of this questionnaire can be interpreted as: minimal disability (results between 0-20%), moderate disability (between 21-40%), severe disability (between 41-60%), crippling (between 61-80%), and confined to bed/exaggerated (between 81-100%).

Procedure

After the letter of formal consent was signed by the volunteers and their parents or responsible, followed by the approval of the Committee of Ethics, the questionnaires of quality of life (SF-36) and functional disability were administered in two different phases. In the first phase, the questionnaires were applied during the pre-tournament practices, in which the athletes were engaged in physical training. Eight weeks later, the questionnaires were re-

administered (second phase), with the athletes engaged into practices and competition.

The questionnaires were administered by the researcher in the same location the athletes practiced and played the official games, which was the Basketball gym of a private high-school. The questionnaires were distributed and collected before the practices started so the results would not be influenced by the athlete's after practice fatigue, which may also vary from one practice to the other.

The collected data was then inserted into Microsoft Excel[®] Plan Sheets so the average score from each player and from the entire team could be calculated and displayed into graphics. The data collected from the SF-36 questionnaire was analyzed through the quality of life outcome measure correction form, and through the statistical t-test which was applied for each domain of each player. The calculations for the Oswestry questionnaire was made by the researcher, using the Functional Disability correction form, as presented by Ranney¹⁴.

Results

No statistical significances ($p > 0,05$) were observed for the athletes quality of life during pre-season and competition. However, modifications in the domain scores can be observed in Figures 2, 3 and 4. The data regarding the entire team (Figure 1) demonstrated that the average domains maintained practically similar for both pre and during season for the sample utilized in this pilot study.

When analyzing the athletes with regards to their position on the court, certain differences can be observed in the questionnaire domains: for the centers (Figure 2) a decrease in the domain physical aspect and an increase in vitality were detected comparing pre and during season; for the point guard position (Figure 3), a decrease in the domains physical and emotional aspects, from pre to during season, was detected; and analyzing the forwards and

shooting guards (Figure 4), a subtle increase in the domain physical aspect, from pre to during season, was observed. However, the differences observed for these samples were not statistically significant according to the t-test ($p > 0,05$).

The data collected by the Oswestry Functional Disability questionnaire presented no alterations with regards to the athlete's level of disability. The functional disability degree remained minimal for both pre and during competition, according to the correction form presented by Ranney¹⁴.

Discussion

The goal of this pilot study was to identify different components of the quality of life of young Basketball athletes and also to evaluate whether a degree of functional disability was present. When compared to the average domains of the patients in the research performed by Ciconelli et al.¹⁵, it is possible to observe that the average domains presented by the young athletes of this pilot research are superior to the arthritic patients, proposing a better quality of life in general. Analyzing another study concerning manual workers presenting musculoskeletal injuries related to their occupation¹⁶, high scores for physical health were collected, suggesting that regardless of the injuries observed, the work performance and quantity was not altered. This data agrees with the results found in the present study.

Even though the injuries observed during the season are orthopedic related injuries, the quality of life according to the SF-36 questionnaire presented by the athletes was superior to the quality of life observed for the orthopedics patients who participated in the research performed by Barros¹⁷. When analyzing graphic 1, a subtle change in the domains can be observed. However, these changes are not statistically significant. The quality of life of the entire team did not alter significantly during the tournament.

The results collected via the questionnaire average domains can be compared to the unaltered results of the Functional Disability questionnaire answered by the athletes. In this later questionnaire, the incapacity regarding functional activities of daily life was minimal. The athletes' improved physical condition, due to engagement in intense physical activity (practices and games) during 8 weeks, provided fully capability of daily life activities. This fact also agrees with the domain "functional capability" in the SF – 36 questionnaire, which presented a slightly improvement (Figure 1).

However, once the individuals are analyzed separately the results are quite different from what is previously mentioned. A difference is observed when comparing the quality of life of the athletes with respect to their positions on the court. It is observed a dissimilarity of the average SF – 36 scores of the point guards and centers when compared with the forwards and shooting guards. It should be noted that the amount of time spent on the court by each athlete was also considered. Thus, the altered average in the domains did not favor the players who spend more time in the game.

It can be observed on Figure 2 that a decrease in the domain physical aspects occurred among the centers. As seen in the literature, the position center requires a great demand of physical strength¹⁸. However, even with the great physical demand placed upon the young athletes in this position, their average vitality increased, displaying a better presentation of this specific domain in their quality of life. It can also be correlated with the minimal functional disability seen in the Oswestry questionnaire. Their degree of functional disability did not alter (minimal) during the season.

In the point guard position, a decrease in the domains physical aspects and emotional aspects was observed (Figure 3). The decrease in the physical aspects can be interpreted by the great demand of physical health placed upon the point guard position. This position requires speed, strength, and agility, and it is the most fa-

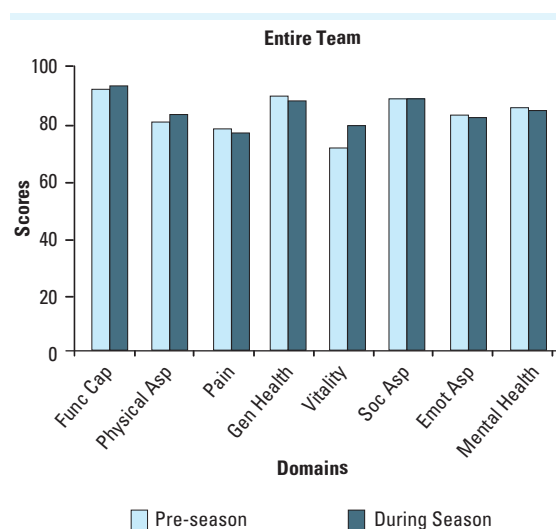


Figure 1: Pre and during season average domain scores: Entire team

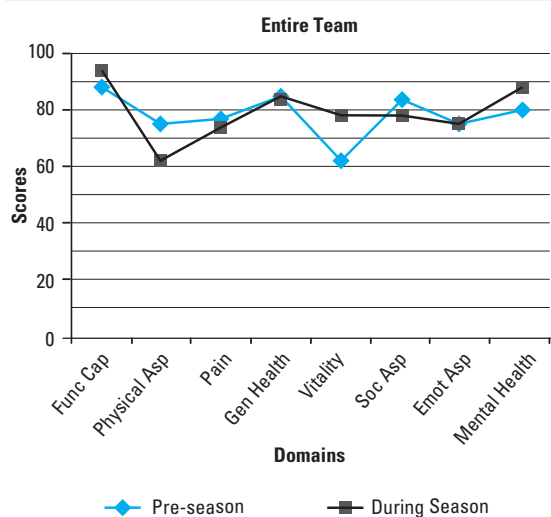


Figure 2: Pre and during season average domain scores: Centers

tiguing position in the game¹⁸. This fact can lead to the decrease in the domain emotional aspect as well, observed in Figure 3.

When analyzing the forward and shooting guard positions (Figure 4), it was observed a very subtle change in the disposition of the graphic lines with their domain physical aspects increasing during competition. The lines displaying the average domain of both pre and during season data presented very similar aspects,

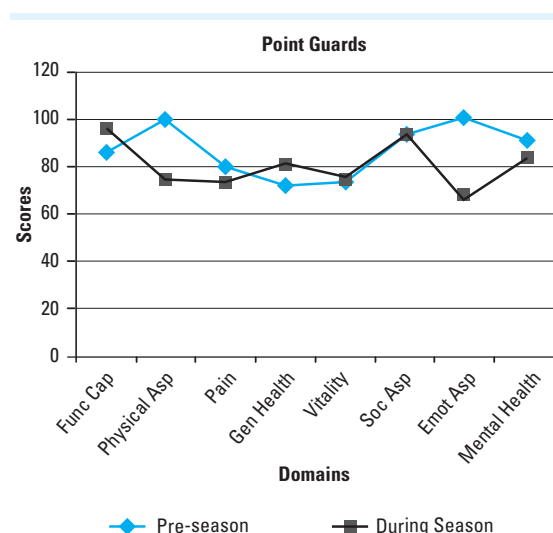


Figure 3: Pre and during season average domain scores: Point Guards

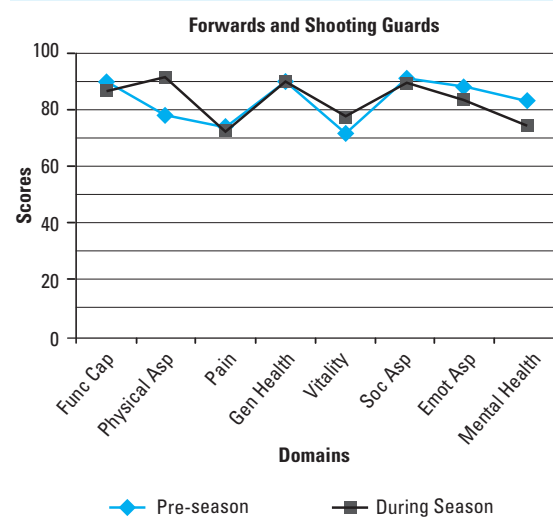


Figure 4: Pre and during season average domain scores: Forwards and Shooting

indicating that their quality of life, along with the functional disability degree, did not change with the intense competition.

An important factor contributing to the overall minimum score in the functional disability questionnaire for the athletes of this study was the fact that they were engaged only 4 and ½ hours of practice per week, along with one official game during the weekend. The physical stress and mental demand placed upon

these athletes are not as excessive as compared to athletes who are engaged in regular physical activities each day of the week, as observed in the research performed by Moreira¹⁰.

Thus, it was concluded that the amount of practice and game hours did not alter the degree of functional disability of the young athletes who participated in this pilot study. The athletes' quality of life was only altered in specific domains with regards to the demands of each position on the court. There was no significant alteration on the overall quality of life observed for the entire team, along with minimal degree of functional disability during competition. Further studies should focus on a greater sample of young athletes who are engaged in intense practices more regularly throughout the week.

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