

Subjective analysis of sleep quality of female futsal players
Análise subjetiva da qualidade de sono de jogadoras de futsal feminino
Análisis subjetivo de la calidad del sueño de jugadoras de futsal femeninas

Received: 11/09/2020 | Reviewed: 11/11/2020 | Accept: 11/14/2020 | Published: 11/18/2020

Diogo Matheus Barros da Silva

ORCID: <https://orcid.org/0000-0002-7966-8075>

Federal University of Maranhão, Brazil

E-mail: diogoldu@gmail.com

Ester da Silva Caldas

ORCID: <https://orcid.org/0000-0002-8856-2598>

Federal University of Maranhão, Brazil

E-mail: esterscaldas@gmail.com

Sergio Costa Ferreira

ORCID: <https://orcid.org/0000-0001-7192-8605>

Federal University of Maranhão, Brazil

E-mail: sergioocf@yahoo.com.br

Diego Nunes Navarro

ORCID: <https://orcid.org/0000-0002-3543-2036>

Federal University of Maranhão, Brazil

Federal University of ABC, Brazil

E-mail: diego.n.navarro@gmail.com

Bruno Luiz Galvão de Miranda

ORCID: <https://orcid.org/0000-0002-2460-5982>

Federal University of Maranhão, Brazil

E-mail: bruunoluiz@hotmail.com

Marlon Lemos de Araújo

ORCID: <https://orcid.org/0000-0001-6861-7005>

Federal University of Maranhão, Brazil

E-mail: mrln21@hotmail.com

Antonio Coppi Navarro

ORCID: <https://orcid.org/0000-0001-8113-4489>

Federal University of Maranhão, Brazil

Abstract

Introduction: Futsal is characterized as an intermittent sport modality, which includes technical and tactical skills and cognitive, physical and physiological capacities, those aspects can be influenced by several factors, including sleep. This is considered as a behavioral state of restorative characteristic of the cellular and cognitive aspects, in their respective phases: REM sleep (fast waves) and N-REM sleep (slow waves). Being regulated by the circadian rhythm and the sleep wake cycle. **Aim:** To verify the subjective quality of sleep of female futsal players. **Materials and Methods:** The study followed ethical recommendations and has CAAE 04087718.2.0000.5086 from HU-UFMA; For convenience, 9 adult players were selected, with an average age in years of 25.3 ± 5.19 with an average body weight in kg of 63.6 ± 14.92 , average height in centimeters $1.62 \pm 0,4$ and body mass index in Kg/m^2 of 23.96 ± 5.05 ; The subjective quality of sleep was assessed by the Pittsburgh Sleep Quality Index (PSQI-BR); **Descriptive statistics. Results and Discussion:** The players (100%) had poor sleep quality, an average score of 10.67 ± 3.3 , lasting for hours of sleep less than 8 hours, an alarming data for a modality that involves high physical and cognitive demands during the game. **Conclusion:** The players were identified with unsatisfactory sleep and duration below average. It is necessary to take measures that modulate adequate sleep, for a possibility of improvement in performance.

Keywords: Futsal; Women's futsal; Sleep.

Resumo

Introdução: O futsal se caracteriza como uma modalidade esportiva intermitente, que engloba as habilidades técnicas e táticas e capacidades cognitivas, físicas e fisiológicas, esses aspectos podem sofrer influência por diversos fatores, dentre eles o sono. Este é considerado como estado comportamental de característica restauradora dos aspectos celular e cognitivo, em suas respectivas fases: o Sono REM (ondas rápidas) e Sono N-REM (ondas lentas). Sendo regulado pelo ritmo circadiano e pelo ciclo de vigília do sono. **Objetivo:** Verificar a qualidade subjetiva do sono de jogadoras de futsal feminino. **Materiais e Métodos:** O estudo seguiu as recomendações éticas e possui CAAE 04087718.2.0000.5086 do HU-UFMA; Foram selecionadas, por conveniência, 9 jogadoras da categoria adulto, com idade média em anos de $25,3 \pm 5,19$ com peso corporal médio em kg de $63,6 \pm 14,92$, estatura média em centímetros $1,62 \pm 0,4$ e índice de massa corporal em kg/m^2 de $23,96 \pm 5,05$; A qualidade subjetiva do sono

foi avaliada pelo Índice de Qualidade de Sono de Pittsburgh (PSQI-BR); estatística descritiva. Resultados e Discussão: As jogadoras (100%) apresentaram qualidade de sono ruim, escore médio $10,67 \pm 3,3$, com duração em horas de sono inferior a 8 horas, dado alarmante para uma modalidade que envolve alta exigência física e cognitiva durante o jogo. Conclusão: As jogadoras foram identificadas com sono insatisfatório e com duração abaixo da média. Dessa forma, se faz necessário medidas que modulem o sono adequado, para uma possibilidade de melhora no desempenho.

Palavras-chave: Futsal; Futsal feminino; Sono.

Resumen

Introducción: El fútbol sala se caracteriza por ser una modalidad deportiva intermitente, que incluye habilidades técnicas y tácticas y capacidades cognitivas, físicas y fisiológicas, estos aspectos pueden estar influenciados por varios factores, entre ellos el sueño. Este es considerado como un estado conductual de carácter reparador de los aspectos celular y cognitivo, en sus respectivas fases: sueño REM (ondas rápidas) y sueño N-REM (ondas lentas). Estar regulado por el ritmo circadiano y el ciclo de sueño y vigilia. Objetivo: Verificar la calidad subjetiva del sueño de las jugadoras de fútbol sala. Materiales y métodos: El estudio siguió las recomendaciones éticas y cuenta con CAAE 04087718.2.0000.5086 de HU-UFMA; Por conveniencia, se seleccionaron 9 jugadores adultos, con una edad promedio en años de $25,3 \pm 5,19$ con un peso corporal promedio en kg de $63,6 \pm 14,92$, altura media en centímetros $1,62 \pm 0,4$ e índice de masa corporal en Kg/m^2 de $23,96 \pm 5,05$; La calidad subjetiva del sueño se evaluó mediante el índice de calidad del sueño de Pittsburgh (PSQI-BR); Estadísticas descriptivas. Resultados y Discusión: Los jugadores (100%) tuvieron mala calidad de sueño, una puntuación media de $10,67 \pm 3,3$, con una duración de horas de sueño inferior a 8 horas, dato alarmante para una modalidad que implica altas exigencias físicas y cognitivas durante el juego. Conclusión: Los jugadores fueron identificados con sueño insatisfactorio y duración por debajo de la media. Por tanto, es necesario tomar medidas que modulan el sueño adecuado, por una posibilidad de mejora en el rendimiento.

Palabras clave: Fútbol sala; Fútbol sala femenino; Sueño.

1 Introduction

Sleep is considered an essential behavioral state for the restoration of neurophysiological mechanisms and is regulated by the process of circadian rhythm and sleep

wake cycle (Haddad, et al., 2017). It is divided into two phases: fast wave sleep (REM), characterized as an active phase, and slow wave sleep (NREM), characterized as a passive phase.

According to Bleyer, et al., (2015) affirm that although there is no number of hours as a cutoff point for good athletic performance, the ideal amount is associated with individual values.

In this sense, the perception of an unsatisfactory sleep negatively affects performance, thus influencing physiological, physical, cognitive and behavioral capacities (Pallesen, et al., 2017; Cruz, 2018).

And futsal, which is characterized as an intermittent modality with interaction of physical capacities such as speed, agility, endurance and cognition, in addition to involving the participation of technical and tactical skills, may be influenced by the quality of sleep. Thus, knowledge of the sleep pattern is of great value for a more qualified structuring of work planning and due to the scarcity of studies on sleep patterns in futsal.

The present study aimed to identify the quality of subjective sleep in female futsal players in the adult category.

2 Materials and Methods

The present study is a quantitative research with a descriptive characteristic (Pereira, et al., (2018).

2.1 Ethical Considerations

The research project followed the recommendations of Resolution 466/12 of the National Health Council and was submitted to the Research Ethics Committee involving Human Beings at the University Hospital of the Federal University of Maranhão, and having CAAE 04087718.2.0000.5086 from CONEP and thus participants signed the Free and Informed Consent Form (ICF).

2.2 Sample characterization

The research sample was of convenience and composed of 9 players from a women's futsal club in the city of São Luís, in the state of Maranhão, with an average age in years of

25.3 ±5.19 with an average body weight in kg of 63, 6 ±14.92, average height in centimeters 1.62 ±0.4 and body mass index in kg / m² of 23.96 ±5.05. Inclusion criteria were adopted: Be present on the collection day, training regularly for a minimum of 6 months. Exclusion criteria: If you are absent during collection, answer the questionnaire improperly.

2.3 Procedures

The collections were performed during 3 games in a local competition of the adult category known as “Copa Ludovicense de Futsal Feminino - 2019” in São Luís-MA, being assessed the subjective quality of sleep.

Through the application of the questionnaire prepared by the researchers with 4 questions with the following aspects: time of education, time of practice, frequency of training and hours of training, chart 1.

Sleep quality was collected through the Pittsburgh Sleep Quality Index (PSQI-BR) which was developed by (Buysse, et al., 1989) and validated by (Bertolazi, et al., 2011). The PSQI-BR is a subjective method that assesses the quality and disturbances of sleep over a period of one month. Being applied after the completion of the three games of the competition.

This questionnaire consists of 11 questions grouped into seven components. The components of the PSQI-BR are: C1 subjective sleep quality, C2 sleep latency, C3 sleep duration, C4 usual sleep efficiency, C5 sleep changes, C6 use of sleeping medications, C7 daytime sleep dysfunction. The sum of the components ranges from 0 to 21. Where 0 to 4 points indicate good quality of sleep and 5 to 10 points of poor quality.

2.4 Statistical analysis

Descriptive statistics, mean, standard deviation, absolute frequency and relative frequency.

3. Results

Chart 1 - Schooling, practice time, training frequency, hours of training.

Education	Complete MS (1) 11,11%	Incomplete ES (6) 66,66%	ES complete (2) 22,22%
Practice time	>1 year and <2 years (1) 11,11%	>2 years and <3 years (1) 11,11%	>3 years (7) 77,77%
Training frequency	1 session (5) 55,55%	2 sessions (2) 22,22%	3 sessions (3) 33,33%
Hours of training	>1 hour and <2 hours (1) 11,11%	>2 hours and <3 hours (6) 66,66%	>3 hours (2) 22,22%

Legend: Complete MS=Complete High School; Incomplete ES=incomplete higher education; Complete ES=Complete Higher Education. Source: Authors.

Chart 2 - Pittsburgh Sleep Quality Index (PSQI-BR).

PSQI-BR score	10,67 ±3
Hours of sleep	7 hours and 13 minutes ± 1.23
Bad sleep	100%

Source: Authors.

4. Discussion

The results showed in chart 1, we have a high level of schooling, given that 88.88% are in higher education, which differs from the standard of schooling of the Brazilian population, with 20.50% of higher education (IBGE, 2017).

Regarding the time of futsal practice, the team has 77.77% greater than 3 years, thus being able to suggest little time of practice of the modality when it comes to a performance team.

With regard to the frequency of training, we have 55.55% with only one training session per week, which for a performance team, is very little.

Regarding the training hours per session, 66.66% of the players perform training between 2 and 3 hours, which is also little and poorly distributed.

In the present study, the predominance of sleep quality was poor (100%) in futsal players. Thus, the variables shown in chart 1 do not correlate with the quality of sleep shown in chart 2. In this sense, we can suggest other variables that may correlate with sleep quality.

Bleyer, et al., (2015) identified 65% of elite athletes from Santa Catarina of individual and collective modalities with bad sleep, although this value is inadequate, it is still better than the result found in the present study of 100%, this minor difference, may be due to the guidance on sleep hygiene that athletes received during the competitive period. Palessen, et al., (2017) state that sleep hygiene enhances the quality and quantity of the individual's sleep.

Unsatisfactory sleep in terms of quantity and quality are associated with factors such as stress that may have a negative influence on sports performance (Erlacher, et al., 2011; Santa Cruz, 2018). The literature reports that lack of flexibility to perform training associated with sleep deprivation and high external training loads such as volume and intensity can impact the sleep pattern, providing a bad sleep (Cruz, 2017; Santa Cruz, 2018).

Simões, et al., (2019) report that the average duration of the world population is less than 8 hours of sleep. With regard to the hours of sleep of the futsal players in this study, which consists of 7 hours and 13 minutes, they are close to those reported in the scientific literature. Thus, it corroborates the studies by Bleyer et al., (2015) that observed similar values, for women (7 hours and 52 minutes).

Brand, et al., (2009) verified a sleep duration of more than 8 hours of sleep in adolescent athletes. In athletes of Olympic level, sleep duration of less than 7 hours was observed by Leeder, et al., (2012).

Therefore, Walker & Stickgold (2005) reported that a good sports performance and according to the capacities and skills required during their practice, is related to a good quality of sleep and associated with quantity and quality. Thus, these findings in the present study become worrying for a possible success of this team in futsal games, due to the quantity and quality of sleep as shown in chart 2.

It is notorious to observe an expansion in scientific production, in order to spread new knowledge about futsal. It is worth mentioning that these works are still insufficient, and it is observed that this production in relation to the female gender is even smaller (Galatti, 2018).

In this sense, the knowledge about the quality of sleep and the application of this scientific knowledge, which little explored in the sports context, can come to assess the scientific production regarding the Futsal modality in relation to the female gender and thus provide theoretical and practical subsidies to the commissions techniques.

5 Conclusion

The players were identified as having poor sleep and lasting below average during the competitive period.

Thus, interventions that provide a satisfactory sleep quality are interesting. This can be done through guidance for the performance of adequate sleep hygiene, aiming at the possibility of improving sports performance.

Therefore, we also suggest future studies, with basic categories of women's futsal.

References

Bertolazi, A. N., Fagundes, S. C., Hoff, L. S., Dartora, E. G., Silva Miozzo, I. C., Barba, M. E. F., & Barreto, S. S. M. (2011). Validation of the brazilian portuguese version of the pittsburgh sleep quality index. *Sleep medicine*, 12 (1), 70-75.

Bleyer, F. T. D. S., Andrade, R. D., Teixeira, C. S., & Felden, É. P. G. (2015). Sono e treinamento em atletas de elite do estado de santa catarina, brasil. *Revista Brasileira de Educação Física e Esporte*, 29 (2), 207-216.

Brand, S., Beck, J., Gerber, M., Hatzinger, M., & Holsboer-Trachsler, E. (2009). Football is good for your sleep: favorable sleep patterns and psychological functioning of adolescent male intense football players compared to controls. *Journal of health psychology*, 14, 1144-55.

Cruz, I., Franco, B., & Esteves, A. M. (2017). Qualidade do sono, cronotipo e desempenho em corredores de rua. *Revista Brasileira de Medicina do Esporte*, 23 (6), 483-487.

Erlacher, D., Ehrlenspiel, F., Adegbesan, O. A., & Galal El-Din, H. (2011). Sleep habits in German athletes before important competitions or games. *Journal of sports sciences*, 29 (8), 859-866.

Barreira, J., Gonçalves, M. C R., Medeiros, D C C., & Galatti, L. R. (2018). Produção acadêmica em futebol e futsal feminino: estado da arte dos artigos científicos nacionais na área da educação física. *Movimento*, 24 (2), 607-618.

Instituto Brasileiro de Geografia e Estatística. Pesquisa nacional de amostra de domicílio. 2017.

Leeder, J., Glaister, M., Pizzoferro, K., Dawson, J., & Pedlar, C. (2012). Sleep duration and quality in elite athletes measured using wristwatch actigraphy. *Journal of sports sciences*, 30, 541-45.

Pallesen, S., Gundersen, H. S., Kristoffersen, M., Bjorvatn, B., Thun, E., & Harris, A. (2017). The effects of sleep deprivation on soccer skills. *Perceptual and Motor Skills*, 124 (4), 812-829.

Pereira, A. S., Shitsuka, D. M., Parreira, F J., & Shitsuka, R. (2018). *Metodologia da pesquisa científica*. UFSM. Santa Maria-RS.

Santa Cruz, R. A. R. (2018). Caracterização do padrão de sono de jovens atletas de futsal. *Revista Brasileira de Futsal e Futebol*, São Paulo, 10 (38), 359-364.

Simões, N. D., Monteiro, L H. B., Lucchese, R., Amorim, T. A. D., Denardi, T. C., Vera, I., & Sverzut, C. (2019). Qualidade e duração de sono entre usuários da rede pública de saúde. *Acta Paulista de Enfermagem*, 32 (5), 530-537.

Walker, M. P., & Stickgold, R. (2005). É a prática, com o sono, que leva à perfeição: implicações da aprendizagem dependente do sono e plasticidade para o desempenho das habilidades. *Clínicas em Medicina Esportiva*, 24 (2), 301-317.

Percentage of contribution of each author in the manuscript

Diogo Matheus Barros da Silva - 25%

Ester da Silva Caldas - 12,5%

Sergio Costa Ferreira - 12,5%

Diego Nunes Navarro - 20%

Bruno Luiz Galvão de Miranda - 5%

Marlon Lemos de Araújo - 5%

Antonio Coppi Navarro - 20%