

Prevalence of Active Play in Brazilian children and adolescents: an updated systematic review for the Brazil's Report Card

Prevalência de Active Play em crianças e adolescentes brasileiros: uma atualização de revisão sistemática para o Report Card Brasil

Greice Westphal¹

<https://orcid.org/0000-0001-9107-0108>

Igor Alisson Spagnol Pereira¹

<https://orcid.org/0000-0001-7340-3909>

Maria Luiza Costa Borim¹

<https://orcid.org/0000-0002-9523-4218>

Claudiana Marcela Siste Charal¹

<https://orcid.org/0000-0001-9977-2649>

Nelson Nardo Junior¹

<https://orcid.org/0000-0002-6862-7868>

Abstract – This paper is an update of the systematic review on Active Play published in 2018 by Mendes et al. This systematic review included studies published between 2018 and 2019. The search for potential articles was performed on the following electronic databases: Pubmed/Medline, Web of Science, Bireme, Scielo and Scopus. Initially, 471 papers met the eligibility criteria. However, after deeply analyzed, only two studies remained and were included in the present review. From these articles only one presented individual information on play activity among adolescents age (12-17 years) from Curitiba-PR and it reveals that 77,2% of them were physically active in their free time. The other study included was about the preferences for leisure activities among adolescents from Florianópolis-SC participants in two cross sectional studies in 2001 and 2011. It showed a significant reduction in the preferences for practicing physical activities, while the opposite occurs with sedentary activities like watching TV, playing video games, and using computers. These results along with the inconsistencies in benchmarks of the domain active play among countries involved in the Global Matrix 3.0 made clear the necessity of a standard definition and a proper tool to measure it.

Keywords: Adolescents; Brazil; Children; Leisure activity.

Resumo – Este artigo é uma atualização da revisão sistemática sobre Active Play publicada em 2018 por Mendes et al. Esta revisão sistemática incluiu estudos publicados entre 2018 até 2019. A busca de potenciais artigos foi realizada nas seguintes bases de dados eletrônicas: Pubmed/Medline, Web of Science, Bireme, Scielo e Scopus. Inicialmente, 471 artigos atenderam aos critérios de elegibilidade. Porém, após análise aprofundada, apenas dois estudos permaneceram e foram incluídos na presente revisão. Destes artigos, apenas um apresentou informações individuais sobre a atividade física entre adolescentes de 12 a 17 anos de idade de Curitiba-PR e revelou que 77,2% deles eram fisicamente ativos no tempo livre. O outro estudo foi sobre as preferências por atividades de lazer entre adolescentes de Florianópolis-SC avaliados nos anos de 2001 e 2011. Este apresentou redução significativa na preferência pela prática de atividades físicas, enquanto o contrário foi observado para atividades sedentárias, como assistir TV, jogar videogame e usar o computador. Esses resultados, juntamente com as inconsistências nos pontos de corte do domínio active play entre os países envolvidos na Matriz Global 3.0, deixaram claro a necessidade de uma definição padrão e de uma ferramenta adequada para medi-la.

Palavras-chave: Adolescentes; Brasil; Crianças; Atividade de lazer.

¹ Universidade Estadual de Maringá. Maringá, PR. Brasil.

Received: August 28, 2021

Accepted: October 28, 2021

How to cite this article

Westphal G, Pereira IAS, Borim MLC, Charal CMS, Nardo Junior N. Prevalence of Active Play in Brazilian children and adolescents: an updated systematic review for the Brazil's Report Card. Rev Bras Cineantropom Desempenho Hum 2021; 23:e84442. DOI: <https://doi.org/10.1590/1980-0037.2021v23e84442>

Corresponding author

Greice Westphal.
Universidade Estadual de Maringá
Av. Colombo, 5790, 87020-900, Zona 7,
Maringá (PR), Brasil.
E-mail: greicewes@gmail.com

Copyright: This work is licensed under a Creative Commons Attribution 4.0 International License.



INTRODUCTION

The right to play is recognized in article 31 of the United Nations Convention on the Rights of the Child. That Convention defines play as something initiated, controlled and structured by children. Also as non-compulsory, driven by intrinsic motivation and it has some key characteristics as fun, uncertainty, challenge, flexibility and non-productivity¹.

Considering that play has an undeniable role to the healthy development and well-being of individuals and communities the governments need to be committed and provide opportunities for children play. But instead of that it seems that active play is slowly disappearing replaced by screen time in developed countries or by chores or work among children and youth from developing countries².

As a way to monitor these changes the Global Matrix on physical activity has been gathering data about several domains of physical activity among children and youth from a crescent number of countries. In 2018 the Global Matrix 3.0 on physical activity was published including data from 49 countries. As a result of it became clear that the domain of physical activity with the more incomplete grades was the Active Play (29/49). Only 20 countries were able to find data to assign a grade varying from B (Ethiopia and Netherlands) to F (Estonia and Thailand)².

As a participant of the Global Matrix 2.0 in 2016 and 3.0 in 2018 Brazil has reported its grades related to the physical activity among children and youth. Particularly in 2018 Mendes et al.³ presented the results related to the Active Play for the first time in Brazil. At that occasion the authors recognized that data available were scarce and for that reason they needed to use the global physical activity in order to assign a grade for the domain of Active Play. Seven studies were included, and the overall prevalence of Active Play was 36%.

Considering that and the necessity to keep monitoring that important behavior among children and youth the purpose of this study is to update the systematic review about Active Play among Brazilian children and youth.

METHOD

Records

This systematic review is the updating of the Mendes et al.³ study, and was conducted strictly following the guidance from the PRISMA Statement⁴.

The review protocol was prepared following the PROSPERO International prospective register of systematic reviews protocols⁵ and was registered by the Number: PROSPERO 2021 CRD42021236338.

Search Strategy

The studies were searched on five electronic database platforms (Pubmed/Medline, Web of Science, Bireme, Scielo and Scopus) and was conducted by the authors (GW, CMSC and IASP). This revision was carried out from August to December of 2020 and selected articles published in 2018 or 2019 in peer-reviewed journals. For the investigation of potential manuscripts, we used

the advanced search tool in each of the databases (searches performed using “keywords”), The following terms were used in the studies search: ‘Active Play’, ‘Active Behavior’, ‘Unstructured Physical Activity’, ‘Active Leisure’, ‘Active Free Time’, ‘Active Video Game’, ‘Exergames’, ‘Playground Activity’, ‘*Lazer Ativo*’, ‘*Brincar Ativo*’, ‘*Comportamento Ativo*’, ‘*Tempo Livre Ativo*’, ‘Children’, ‘Adolescents’, ‘Youth’, ‘*Crianças*’, ‘*Adolescentes*’, ‘*Jovens*’, ‘*Brasil*’, and ‘Brazil’.

For an advanced search, the Boolean operator “OR” was used to add to at least one word and the operator “AND” to associate the keywords to another. Besides, the specific filters available in each of the databases searched were used.

Study selection

For this systematic review, only observational studies were included (cross-sectional and longitudinal). For the inclusion criteria, the studies had to be carried out with Brazilians children or adolescents (individuals up to 19 years old), and to present data about the prevalence or the preference of active play. Only articles in English and Portuguese were considered eligible for inclusion.

The titles and abstracts screening of potential articles, and the full text analysis were performed by two authors (GW and MLCB). In case of disagreement between the two reviewers, a third author (CMSC) was consulted to made consensus. In addition, a manual search from the reference lists of the accepted articles was performed. Only full reported studies were considered for eligibility (short communications, editorials or comments were excluded).

Data extraction

Relevant information from the included articles was independently extracted by three reviewers (GW, IASP and MLCB) in an electronic spreadsheet.

Data were organized into seven domains: author and year of publication, Brazil region where the study was developed, sample size, age group, percentage of females, purpose of the study and prevalence of Active Play.

Active play

To collect and analyze the data regarding *active play*, studies approaching any physical activity of any intensity since practiced in an unstructured and freely chosen way were selected. The term *active play* and even the studies related to it are still at their infancy in the literature. Thus, studies that used other indicators of *active play* were analyzed individually and their data used to verify the presence or the preference of active play. The cutoff point proposed for active play is the minimum of two hours of physical activity per day, but there is controversy about that, and different countries used different cutoffs. We decided to describe the information included by these studies due to the paucity of studies regarding to *active play*.

RESULTS

The systematic Searches on electronic databases initially retrieved 489 articles. A total of 471 articles were evaluated by titles and abstract, and, after excluding

articles with themes unrelated to the aim of the present study, 10 articles were fully evaluated for eligibility during period from 2018 and 2019. Thus 8 studies were excluded, as they did not show the prevalence of Active Play, type of play, and only 2 papers were considered with relevant information about active play to be included in this systematic review (Figure 1)^{6,7}.

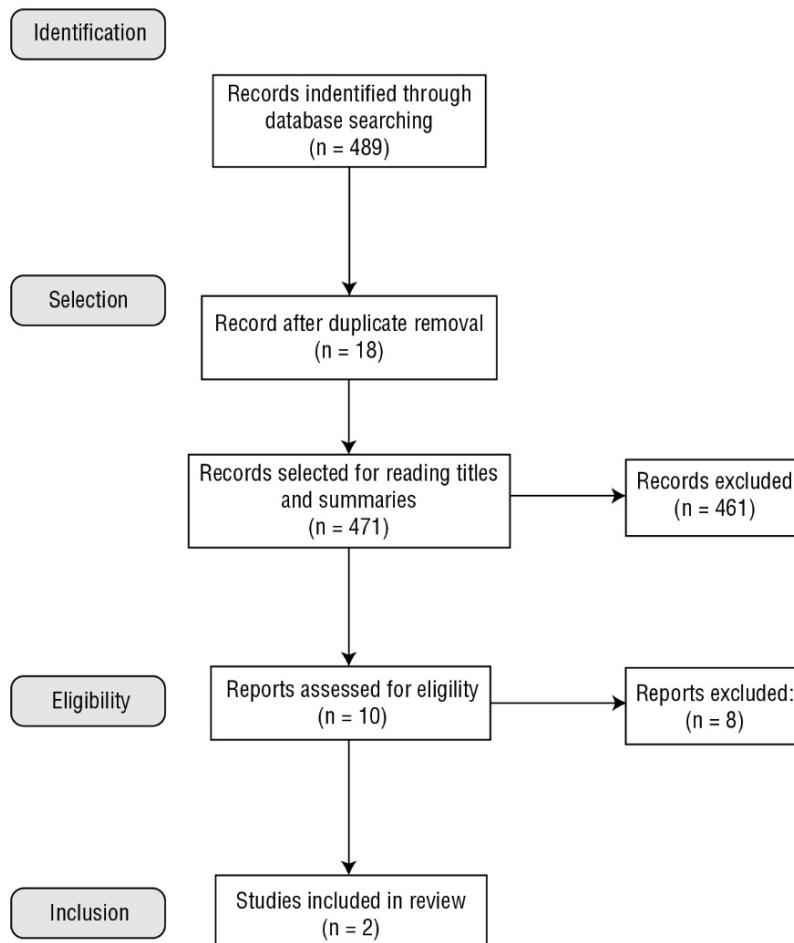


Figure 1. Flow chart of the systematic review.

Prevalence of Active Play

The aim of the present systematic review was to update the information about the prevalence of Active Play in Brazilian children and adolescents including studies published during the years 2018 to 2019. Considering the narrow period of this review it was not surprise the scarcity of studies. Despite of that the two studies selected for that review brings important information related to the preference for leisure activities, and they are summarized at the Table 1.

The study of Bertuol et al.⁷, compared the preference for leisure activities based on representative samples of high school students (aged 15-19 years) from public schools in the state of Santa Catarina, South of Brazil. In that study students answered one question on the preferred leisure activity, organized into

six groups of activities. The question was applied in 2001 and 10 years later, in 2011, for students in the same schools.

After a decade, there were significant reductions in the preference for practicing physical activities, cultural activities and other activities, while the preference for watching TV, playing video games and using computer increased over time. These trends were similar between boys and girls and between younger (15-16 years-old) and older (17-19 years-old) students. The magnitude of changes was bigger in the proportion of preference for using computer (increase) and for practicing physical activities (decrease).

The preference for practicing physical activities was significantly reduced from 2001 to 2011, independent of gender and of age group. The reduction in the preference for practicing physical activities during leisure time observed might become a public health concern, because this reduction tend to facilitate the maintenance of an inactive lifestyle that has been observed among young people.

The second study included into this review made a characterization of physical activities performed by adolescents from Curitiba, a city which is a capital of one state from the south of Brazil. The study has the objective of describe the places, types, frequency, duration and volume of physical activities performed by adolescents. It was a cross-sectional study conducted in 2013-2014 through a household survey of 495 adolescents (12 to 17 years)⁶.

The practice of physical activity was determined through the Physical Activity Questionnaire for Adolescents, by type, frequency, duration and weekly volume. The physical activity places located near the household were evaluated by asking the following question: "In a normal week, do you go to these places near your residence (10-15 minutes walking) to practice any physical activity?"

The options of answers for the places included park, square, walking/running track, cycle paths, soccer fields, gymnasiums or sports courts, gyms, clubs, outdoor gyms, skateboarding bowls, school and others ranged from 0-7 days/week. The participants were categorized into the categories: 0 "does not go" and ≥ 1 "goes"

The questionnaire used by authors to evaluated the physical activity practiced includes a list of 24 activities, and the adolescents could add activities other than those listed. Most participants were aged 12-13 (41.4%), were at a low socioeconomic level (59.0%), presented normal nutritional status (58.3%) and do some physical activity in their free time (77.2%), with a higher proportion of boys (85,2 vs 69,3 for girls) Table 1.

Table 1. Descriptive characteristics of included studies (n=2).

Study	Region	Sample Size	Age range (years)	Sex (%Female)	Main Goal	Prevalence of Active Play
Bertuol et al. ⁷	Southern	11,557	15-19	2001: 5,028 Studentes (59.6% girls) 2011: 6,529 Studentes (57.8% girls)	The purpose of this study was to identify changes after a decade in the preference for leisure activities according to gender and age group between two generations of adolescents from southern Brazil.	Not determined
Silva et al. ⁶	Southern	495	12-17	50.7% girls	To describe the places, types, frequency, duration and volume of physical activities performed by adolescents in Curitiba, Brazil	77.2% (85.2% male; 69.3 female)

The physical activities most practiced by adolescents were soccer (27.9%), skateboarding/rollerblading (22.6%), cycling (18.8%), walking (18.0%) and

active gaming (16.6%). Comparing between the sexes, a greater proportion of boys reported cycling (25.4%), basketball (9.4%), running/jogging (17.2%), soccer (44.7%), indoor soccer (13.9%) and skateboarding/rollerblading (29.1% $p < 0.001$). Among the girls, the most practiced activities were walking (23.1%), dancing (11.2%), fitness activities (4.8%), handball (2.4%), playing games and doing playful activities (5.6%) and walking the dog (19.5%).

Considering the categories of practice, the one with the more volume was sports with 720 min/week, follow by aerobic activities (400 min/week) and physical conditioning (345 min/week). Another result reported by 16.6% of adolescents was the practice of active gaming in their leisure time.

DISCUSSION

The reason to propose the indicator Active Play by the group of researchers who start to assess the physical activity patterns among Canadian children and adolescents was to keep monitoring this behavior that they see as one of the most important for kids because it promote the contact with the nature and the opportunities to play. They highlight that unlike organized sports and structured physical activities, active play has no clear outcome or purpose. However, this kind of play provides a valuable context for children: it is a chance for them to learn and be physically active while having fun⁸.

They also consider that the outdoors offers natural play spaces and elements that provide valuable physical and cognitive challenges for children, which help them develop motor skills, learn about their own potential and boundaries. In other words, active play can contribute to improved physical, emotional, social and cognitive development⁸.

Other authors have characterized active play as involving symbolic activity or games with or without clearly defined rules. The activity may be unstructured/unorganized, social or solitary, but the distinguishing features are a playful context, combined with activity that is significantly above resting metabolic rate. They also add that the activity is self-determined and not adult-led or organized¹.

Considering these features and other aspects related to the accuracy in its measurements it must be clear that active play tends to occur sporadically, with frequent rest periods, which makes it difficult to record¹.

Maybe for that reason it is the physical activity domain which has the higher number of incomplete grades among the 49 countries participating in the Global Matrix 3.0. At that occasion, only 20 from the 49 countries involved in such initiative had enough information about that behavior to permit to assign a grade for it². Even the Canadian research group who are the leaders of the report card globally have only graded this domain in the last two report cards been 2016 and 2018, whose grades were D+ and D, respectively. They even recognize that the target of several hours of active play per day is arbitrary, and further research is required to establish a benchmark that is linked to health outcomes⁸.

There is still intense debate on some crucial aspects related to a consistent definition of active play and about the best way to measure it. Considering that Truelove et al.⁹, propose the following definition for active play: “engaging in an activity for enjoyment and recreation rather than a serious or practical purpose “. The same authors have described that a decline in preschoolers play opportunities has been identified due to increasing fears about safety of play like road safety, stranger danger among others⁹.

Among the countries that have assigned a grade for active play there are still evident disagreement about the benchmarks and even related to the grade given for the same country. That shows how far that physical activity domain is from the most traditional ones. For example, the Netherland report card presented a grade D at the paper published by Takken et al.¹⁰ and a grade B by the same authors and population in their paper published by Takken and Jong¹¹.

At the first publication from 2018 they graded B for active play considering that 70% of children play actively outside more than 1 time per week¹¹. Whereas in the second paper of 2020, but also based on the data from 2018 they graded D cause 34% of the children were playing outside daily for at least 60 min¹⁰.

Divergences were presented at the Bulgaria's 2018 Report card related to the benchmark used. In this case they considered outdoor activities for 3 or more days weekly¹² whereas in the Netherland case they consider more than 1 time per week. The divergences related to the benchmark for active play is also present at the report card of New Zealand. They graded C+ representing 82% of 5-17 year old in the Active NZ Survey had been active while playing (on their own or with others) in the last 7 days; 30% had been active while playing for at least 7 hours in the last 7 days¹³.

The lack of one standard or more clear benchmark is evident in the Nigeria's report card. They assigned a grade C with the justification: "this grade was selected as Nigeria now has an improvement in overall physical activity and organized sports". The difficulties are even more clear when they stated that leisure activities are those that children and youth engage in during their free time, and complete: free time refers to periods when the children and youth are neither involved in school or domestic work. In the sequence they add: "such activities include screen and outdoor activities. Screen activities include, but are not limited to, computer and video games, watching TV and using phones and computers for activities other than playing games¹⁴."

In that same direction the India's report card has as the benchmark spend at least 1 hour playing outdoors per day and spending at least 1 hour in active play per day¹⁵. Whereas in the Spain's report card they considered being outdoors 2 or more hours per day during the week¹⁶. The same kind of divergences are presented in the Wales', China's, Zimbabwe's and Botswana's report card^{1,17-19}.

As was well stated by Truelove et al.⁹ until a tool exists to measure active play, and more importantly, a standard definition is widely accepted and used, it will continue to be challenging to assess active play behaviors among this young population. Considering that and the lack of studies related to this thematic in Brazil new studies are clear necessary to develop this field.

CONCLUSION

This systematic review showed that the Active Play studies in Brazil were just related to adolescents. These studies are not specifically directed to monitor the active play and they were based in questionnaires. The results cannot be generalized because they were gathered in cities (capitals) which present distinct characteristics from other cities and Brazilian regions. The main issue related to this measurement is the lack of a standard definition and a proper tool to measure it. It is also clear that this matter (Active Play) among children and adolescents seems not being considered relevant by the data available presently and that might change to avoid several problems for the Brazilian kids in the future.

COMPLIANCE WITH ETHICAL STANDARDS

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. This study was funded by the authors.

Ethical approval

The article was written in accordance with the standards set by the Declaration of Helsinki.

Conflict of interest statement

The authors have no conflict of interests to declare.

Author Contributions

Conceived and designed the experiments: GW, IASP, MLCB, CMSC, and NNJ; Performed the experiments: GW, IASP and MLCB; Analyzed the data: GW, IASP, MLCB, CMSC, and NNJ; Contributed reagents/materials/analysis tools: GW, IASP, MLCB, CMSC, and NNJ; Wrote the paper: GW, IASP, MLCB, CMSC, and NNJ.

REFERENCES

1. Stratton G, Edwards L, Tyler R, Blain D, Bryant A, Jones A, et al. Report Card [Internet]. Active Healthy Kids Wales; 2018 [cited 2021 Aug 28]. Available from: <http://www.activehealthykidswales.com/>
2. Aubert S, Barnes JD, Abdeta C, Abi Nader P, Adeniyi AF, Aguilar-Farias N, et al. Global Matrix 3.0 physical activity Report Card grades for children and youth: Results and analysis from 49 countries. *J Phys Act Health*. 2018;15(S2):S251-73. <http://dx.doi.org/10.1123/jpah.2018-0472>. PMID:30475137.
3. Mendes AA, Lopes WA, Locateli JC, de Oliveira GH, Bim RH, Simões CF, et al. The prevalence of active play in Brazilian children and adolescents: a systematic review. *Rev Bras Cineantropom Desempenho Hum*. 2018;20(4):395-405. <http://dx.doi.org/10.5007/1980-0037.2018v20n4p395>.
4. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *J Clin Epidemiol*. 2009;62(10):1006-12. <http://dx.doi.org/10.1016/j.jclinepi.2009.06.005>. PMID:19631508.
5. Nardo N Jr, Westphal G, Pereira IAS, Borim MLC. Prevalence of active play in Brazilian children and adolescents: a systematic review. PROSPERO [Internet]. 2021 [cited 2021 Aug 28];CRD42021236338. Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42021236338
6. Silva AAP, Camargo EM, Silva AT, Silva JSB, Hino AAF, Reis RS. Characterization of physical activities performed by adolescents from Curitiba, Brazil. *Rev Bras Med Esporte*. 2019;25(3):211-5. <http://dx.doi.org/10.1590/1517-869220192503188171>.

7. Bertuol C, Silva KS, Barbosa VC Fo, Bandeira S, Veber Lopes MV, Lopes AS, et al. Preference for leisure activities among adolescents in southern Brazil: what changed a decade? *Rev Psicol Deporte*. 2019;28:71-80.
8. HALO. The Brain + Body Equation: Canadian kids need active bodies to build their best brains. The 2018 ParticipACTION Report Card on Physical Activity for Children and Youth [Internet]. Toronto: ParticipACTION; 2018 [cited 2021 Oct 19]. Available from: www.participACTION.com/reportcard
9. Truelove S, Vanderloo LM, Tucker P. Defining and measuring active play among young children: a systematic review. *J Phys Act Health*. 2017;14(2):155-66. <http://dx.doi.org/10.1123/jpah.2016-0195>. PMID:27775475.
10. Takken T, Jong N, Duijf M, van den Berg S, Wendel-Vos W. Results from the Netherlands' 2018 Report Card and Report Card+ on physical activity for children and youth with and without chronic medical condition. *Public Health*. 2020;185:161-6. <http://dx.doi.org/10.1016/j.puhe.2020.04.044>. PMID:32634607.
11. Takken T, Jong N. Results from the Netherlands' 2018 report card on physical activity for children and youth. *J Phys Act Health*. 2018;15(S2):S388-9. <http://dx.doi.org/10.1123/jpah.2018-0513>. PMID:30475147.
12. Mileva B. Results From Bulgaria's 2018 Report Card on Physical Activity for Children and Youth. *J Phys Act Health*. 2018;15(S2):S326-7. <http://dx.doi.org/10.1123/jpah.2018-0422>. PMID:30475121.
13. Smith M, Ikeda E, Hinckson E, Duncan S, Maddison R, Meredith-Jones K, et al. Results from New Zealand's 2018 report card on physical activity for children and youth. *J Phys Act Health*. 2018;15(S2):S390-2. <http://dx.doi.org/10.1123/jpah.2018-0463>. PMID:30475114.
14. Nigerian Heart Foundation. Nigerian report card on physical activity for children and youth [Internet]. 2018 [cited 2021 Aug 28]. Available from: www.nigerianheart.org
15. Bhawra J, Ranjani H, Krishnaveni G, Anjana RM, Kumaran K. India report card on [Internet]. Harare: Active Healthy Kids India; 2018 [cited 2021 Aug 28]. Available from: www.activehealthykidsindia.com
16. Roman-Viñas B, Zazo F, Martínez-Martínez J, Aznar-Laín S, Serra-Majem L. Results From Spain's 2018 Report Card on Physical Activity for Children and Youth. *J Phys Act Health*. 2018;15(S2):S411-2. <http://dx.doi.org/10.1123/jpah.2018-0464>. PMID:30475128.
17. Liu Y, Tang Y, Cao Z-B, Zhuang J, Zhu Z, Wu X-P, et al. Results from China's 2018 Report Card on physical activity for children and youth. *J Phys Act Health*. 2018;15(S2):S333-4. <http://dx.doi.org/10.1123/jpah.2018-0455>. PMID:30475103.
18. Munambah NE. Physical activity and the nutritional status of school-aged children in Zimbabwe: current research evidence and policy implications [Internet]. Harare: Active Healthy Kids Zimbabwe; 2018 [cited 2021 Aug 28]. Available from: www.activehealthykidszimbabwe.com
19. Tladi DM, Monnaatsie M, Shaibu S, Sinombe G, Mokone GG, Gabaitiri L, et al. Results from Botswana's 2018 Report Card on physical activity for children and youth. *J Phys Act Health*. 2018;15(S2):S320-2. <http://dx.doi.org/10.1123/jpah.2018-0420>. PMID:30475129.