

RELACIÓN ENTRE LOS NIVELES DE ACTIVIDAD FÍSICA Y LA SALUD MENTAL SEGÚN EL RANGO DE EDAD DURANTE EL TIEMPO DE PANDEMIA POR COVID-19

Estudiante (es): Jose Miguel Malo Acosta y Yuryen Jose Molina Pacheco
Tutor(es): Yaneth Herazo y Lilibeth Sánchez Güette.

RESUMEN

Objetivo: Determinar el cumplimiento de las recomendaciones de actividad física y la salud mental en adultos según el rango de edad durante el tiempo de la pandemia por COVID-19.

Materiales y Métodos: Se realizó un estudio de tipo cuantitativo con un enfoque transversal a una muestra de 550 personas mayores de 18 años residentes en la región caribe colombiana. Se midieron diferentes variables en un momento dado de la vida de los sujetos de estudio. Se determinó el nivel de actividad física con el Cuestionario Internacional de Actividad Física (IPAQ) formato corto. Se evaluó comportamiento sedentario mediante el tiempo en pantalla y el tiempo sentado. Para valorar la salud mental se utilizó la Escala de Depresión, Ansiedad y Estrés (DASS 21).

Resultados: Se evidenció que los adultos entre el rango de edad de 18 a 28 años tienen niveles de actividad física más altos 48,7% que los adultos entre 29 a 59 años de edad (33,5%). Se encontraron niveles altos de actividad física en personas sin síntomas de ansiedad entre 29 y 59 años de edad y depresión en personas mayores de 18 hasta 28 años de edad (69% vs 50,9%) ($p=0,01$ vs $0,02$).

Conclusiones: Se evidencia que la actividad física es capaz de influenciar en aspectos como las emociones según el rango de edad. Por tal motivo, se deben promover programas con el fin de disminuir el comportamiento sedentario y aumentar la actividad física que otorga beneficios la salud mental en general.

Palabras claves: COVID-19, actividad física, comportamiento sedentario y salud mental, rango de edad

ABSTRACT

Objective: Determine compliance with the recommendations for physical activity and mental health in adults according to the age range during the time of the COVID-19 pandemic.

Materials and Methods: A quantitative study was carried out with a cross-sectional approach to a sample of 550 people over 18 years of age residing in the Colombian Caribbean region. Different variables were measured at a given moment in the life of the study subjects. The level of physical activity was determined with the International Physical Activity Questionnaire (IPAQ) short format. Sedentary behavior was evaluated using screen time and sitting time. To assess mental health, the Depression, Anxiety and Stress Scale (DASS 21) was used.

Results: It was evidenced that adults between the age range of 18 to 28 years have higher levels of physical activity 48.7% than adults between 29 to 59 years of age (33.5%). High levels of physical activity were found in people without anxiety symptoms between 29 and 59 years of age and depression in people older than 18 to 28 years of age (69% vs 50.9%) ($p = 0.01$ vs $0, 02$).

Conclusions: It is evident that physical activity is capable of influencing aspects such as emotions according to age range. For this reason, programs should be promoted in order to reduce sedentary behavior and increase physical activity that provides benefits for mental health in general.

Keywords: COVID-19, physical activity, sedentary behavior and mental health, age range

REFERENCIAS (colocar a cada artículo el DOI o la URL en caso de no tener DOI)

1. World Health Organization (WHO). WHO Guidelines on Physical Activity and Sedentary Behaviour. Geneva; 2020. <https://www.who.int/publications/i/item/9789240015128>.
2. Organización Mundial de la Salud (OMS). (2020). Actividad Física. Recuperado de <https://www.who.int/es/news-room/fact-sheets/detail/physical-activity>
3. Instituto Nacional de Bienestar Familiar. Encuesta Nacional de Situación Nutricional (ENSIN) 2015. Bogotá D.C.; 2015. <https://www.icbf.gov.co/bienestar/nutricion/encuesta-nacional-situacion-nutricional>.
4. Organización Mundial de la Salud (OMS). COVID-19: cronología de la actuación de la OMS. Abril 2020. <https://www.who.int/es/news/item/27-04-2020-who-timeline---covid-19>.
5. Sedano-Chiroque FL, Rojas-Miliano C, Vela-Ruiz JM. COVID-19 desde la perspectiva de la prevención primaria. Rev. Fac. Med. Hum. 2020; 20(3): 494-501. doi.org/10.25176/rfmh.v20i3.3031.
6. Ramírez-Ortiz J, Castro-Quintero D, Lerma-Córdoba C, Yela-Ceballos F, Escobar-Córdoba F. Consecuencias de la pandemia de la COVID-19 en la salud mental asociadas al aislamiento social. Rev. colomb. Anestesiología. 2020; 48(4): e301. doi.org/10.5554/22562087.e930.
7. Liu S, Yang L, Zhang C, Xiang YT, Liu Z, Hu S, Zhang B. Online mental health services in China during the COVID-19 outbreak. Lancet Psychiatry. 2020; 7(4): e17-e18. doi: 10.1016/S2215-0366(20)30077-8.
8. Gamboa Suárez AA, Hernández Suárez CA, Prada Nuñez R. Efectos depresivos del aislamiento preventivo obligatorio asociados a la pandemia del COVID-19 en docentes y estudiantes de una universidad pública en Colombia: Psicogente. 2020; 24(45):1-20. doi.org/10.17081/psico.24.45.4156
9. Parrado-González A, León-Jariego J. COVID-19: Factores asociados al malestar emocional y morbilidad psíquica en población española. Rev Esp Salud Pública.

https://www.mscbs.gob.es/biblioPublic/publicaciones/recursos_propios/resp/revista_cdrom/VOL94/ORIGINALES/RS94C_202006058.pdf.

10. Severi C, Medina M. Cambios en los hábitos alimentarios y actividad física durante el aislamiento físico durante el COVID -19:. An Facultad Med. 2020; 7(1):e2020v7n1a15. doi: 10.14642/RENC.2020.26.2.5213.
11. Fitbit. The Impact of Coronavirus on Global Activity. Report. 2020. Disponible en:<https://blog.fitbit.com/covid-19-global-activity/>
12. Chandrasekaran B, Ganesan TB. Sedentarism and chronic disease risk in COVID 19 lockdown - a scoping review. Scott Med J. 2021; 66(1):3-10. doi: 10.1177/0036933020946336.
13. Organización Mundial de la Salud (OMS). Enfermedades no transmisibles. Genova; 2109. <https://www.who.int/es/news-room/fact-sheets/detail/noncommunicable-diseases>.
14. Rangel YR, Morejón SR, Cabrera MY, Herranz BD, Rodríguez OW. Therapeutic adherence, level of knowledge of the disease and self-esteem in type 2 diabetic patients. Gac Méd Espirit. 2018; 20 (3): 13-23. <https://www.medigraphic.com/pdfs/espirtuana/gme-2018/gme183b.pdf>
15. Parra-Soto S, Martínez-Sanguinetti M, Cigarroa I, Diaz-Martínez X, Matus-Castillo C, Garrido-Méndez A, et al. ¿Cuál es la asociación entre actividad física, sedentarismo y riesgo de desarrollar cáncer en población adulta? Una revisión de la literatura. Rev. chil. nutr. 2021; 48(2): 245-254. doi.org/10.4067/S0717-75182021000200245
16. Prieto BDH, Correa BJE, Ramírez VR. Niveles de actividad física, condición física y tiempo en pantallas en escolares de Bogotá, Colombia: Estudio FUPRECOL. Nutr Hosp. 2015; 32(5): 2184-2192. doi:10.3305/nh.2015.32.5.9576.
17. Arévalo H, Urina M, Santacruz J. Impacto del aislamiento preventivo obligatorio en la actividad física diaria y en el peso de los niños durante la pandemia por SARS-CoV-2. Rev. Colomb. Cardiol. 2020; 27 (6): 575-582. doi.org/10.1016/j.rccar.2020.09.003

18. Rodríguez-Romo G, Barriopedro M, Alonso SP, Garrido-Muñoz M. Relaciones entre Actividad Física y Salud Mental en la Población Adulta de Madrid. *Rev. psicol. deport.* 2015;24(2):233-239. <https://www.redalyc.org/pdf/2351/235141413005.pdf>
19. Jacob L, Tully MA, Barnett Y, Lopez-Sanchez G, Butler L, Schuch F, et al. The relationship between physical activity and mental health in a sample of the UK public: A cross-sectional study during the implementation of COVID-19 social distancing measures. *Ment. Health Phys. Act.* 2020; 19: doi.org/10.1016/j.mhpa.2020.100345
20. Dinler E, Badat T, Kocamaz D, Yakut Y. Evaluation of the physical activity, sleep quality, depression, and life satisfaction of university students during the COVID-19. *Int J Disabil Sports Health Sci.* 2020; 3(2): 128-139. doi.org/10.33438/ijdshts.770346
21. Stockwell S, Trott M, Tully M, Shin J, Barnett Y, Butler L, et al. Changes in physical activity and sedentary behaviours from before to during the COVID-19 pandemic lockdown: a systematic review. *BMJ Open Sport Exerc Med.* 2021; 7(1):e000960. [doi: 10.1136/bmjsem-2020-000960](https://doi.org/10.1136/bmjsem-2020-000960).
22. Naciones Unidas. Objetivos de Desarrollo Sostenible. <https://www.un.org/sustainabledevelopment/es/health/>
23. República de Colombia. Ministerio de Salud y Protección Social. La importancia de la actividad física como hábito de vida saludable. Boletín de Prensa No 002 de 2021. <https://www.minsalud.gov.co/Paginas/La-importancia-de-la-actividad-fisica-como-habito-de-vida-saludable.aspx>
24. Organización Mundial de la Salud (OMS). Coronavirus. Ginebra; 2020. https://www.who.int/es/health-topics/coronavirus#tab=tab_1
25. Cervera-Martínez J, Atienza-Carbonell B, Mota JC, Bobes-Bascarán T, Crespo-Facorro B, Esteban C, et al. Lifestyle changes and mental health during the COVID-19 pandemic: A repeated, cross-sectional web survey. *J Affect Disord.* 2021; 295:173-182. [doi:10.1016/j.jad.2021.08.020](https://doi.org/10.1016/j.jad.2021.08.020)
26. Rawat D, Dixit V, Gulati S, Gulati S, Gulati A. Impact of COVID-19 outbreak on lifestyle behaviour: A review of studies published in India. *Diabetes Metab Syndr Clin Res Rev.* 2021;15(1):331-336. doi.org/10.1016/j.dsx.2020.12.038

27. Totosy de Zepetnek JO, Martin J, Cortes N, Caswell S, Boolani A. Influence of grit on lifestyle factors during the COVID-19 pandemic in a sample of adults in the United States. *Pers Individ Dif.* 2021; 175:110705. doi:10.1016/j.paid.2021.110705
28. Sánchez OM, De Luna BE. Hábitos de vida saludable en la población universitaria. *Nutr Hosp.* 2015; 31 (5):1910-1919. doi:10.3305/nh.2015.31.5.8608
29. Egger G. Healthy living. *Aust Fam Physician.* 2017; 46 (1): 10-13. <https://www.racgp.org.au/download/Documents/AFP/2017/Jan-Feb/AFP-Jan-Feb-2017-Focus-Egger.pdf>
30. Gooding H, Shay C, Ning H, Gillman M, Chiuve S, Reis J, et al. Optimal lifestyle components in young adulthood are associated with maintaining the ideal cardiovascular health profile into middle age. *J Am Heart Assoc.* 2015; 4 (11): 1-9. doi: 10.1161/JAHA.115.002048.
31. Mize TD. Profiles in health: Multiple roles and health lifestyles in early adulthood. *Soc Sci Med.* 2017; 178: 196-205. doi: 10.1016/j.socscimed.2017.02.017
32. Foth T, Holmes D. Governing through lifestyle-Lalonde and the biopolitical management of public health in Canada. *Nurs Philos.* 2018 Oct;19(4):e12222. doi: 10.1111/nup.12222.
33. Roberti di Sarsina P, Tassinari M. Integrative approaches for health: Biomedical research, ayurveda, and yoga. *J Ayurveda Integr Med.* 2015 Jul-Sep;6(3):213-4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4630699/pdf/JAIM-6-213.pdf>
34. Rippe JM. Lifestyle Medicine 2019: Deeper, Broader, and More Precise. *Am J Lifestyle Med.* 2019;13(5):436-439. doi: 10.1177/1559827619845342.
35. James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, Lackland D, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee. *JAMA.* 2014;311(5):507-520. doi:10.1001/jama.2013.284427.
36. Farhud DD. Impact of Lifestyle on Health. *Iran J Public Health.* 2015 Nov;44(11):1442-1444. <https://europepmc.org/article/PMC/4703222>

37. Cureau FV, Sparrenberger K, Bloch KV, Ekelund U, Schaan BD. Associations of multiple unhealthy lifestyle behaviors with overweight/obesity and abdominal obesity among Brazilian adolescents: A country-wide survey. *Nutr Metab Cardiovasc Dis.* 2018;28(7):765-774. doi:10.1016/j.numecd.2018.04.012
38. National Center for Health Statistics (US). Health, United States, 2008: With Special Feature on the Health of Young Adults. Hyattsville (MD): National Center for Health Statistics (US); 2009 Mar. Report No.: 2009-1232. <https://www.cdc.gov/nchs/data/hus/hus08.pdf>
39. Tremblay MS, on behalf of SBRN Terminology Consensus Project Participants, Aubert S, Barnes JD, Saunders TJ, Carson V, et al. Sedentary Behavior Research Network (SBRN) – Terminology Consensus Project process and outcome. *Int J Behav Nutr Phys Act.* 2017; 14(1):75. doi: 10.1186/s12966-017-0525-8.
40. Pate RR, O'Neill JR, Lobelo F. The evolving definition of "sedentary". *Exerc Sport Sci Rev.* 2008;36(4):173-178. doi: 10.1097/JES.0b013e3181877d1a
41. Owen N, Healy GN, Matthews CE, Dunstan DW. Too much sitting: the population health science of sedentary behavior. *Exerc Sport Sci Rev.* 2010;38(3):105-113. doi: 10.1097/JES.0b013e3181e373a2
42. Botero JP, Farah BQ, Correia M de A, Lofrano-Prado MC, Cucato GG, Shumate G, et al. Impact of the COVID-19 pandemic stay at home order and social isolation on physical activity levels and sedentary behavior in Brazilian adults. *Einstein.* 2021;19: eAE6156. doi: 10.31744/einstein_journal/2021AE6156
43. Centers for Disease Control and Prevention. Physical Activity Basics. ¿Cuánta actividad física necesitan los adultos? U.S. Department of Health and Human Services; 2020. Disponible en: <https://www.cdc.gov/physicalactivity/basics/adults/index.htm>
44. National Heart, Lung and Blood Institute (NIH). Physical Activity and Your Heart. U.S.A. Disponible en: <https://www.nhlbi.nih.gov/health-topics/physical-activity-and-your-heart>
45. Ministerio de la Protección Social, Departamento Administrativo del Deporte, la Recreación, la Actividad Física y el Aprovechamiento del Tiempo Libre -

COLDEPORTES. Hábitos y Estilos de Vida Saludable. Tomo 2. Documento técnico con los contenidos de direccionamiento pedagógico para la promoción de hábitos de vida saludable, con énfasis en alimentación saludable y el fomento de ambientes 100% libres de humo de cigarrillo a través de la práctica regular de la actividad física cotidiana, dirigidos a los referentes de las entidades territoriales. Bogotá D.C, Colombia; 2011.

<https://www.javeriana.edu.co/documents/245769/305029/Habitos+y+Estilos+de+Vida+Saludable+TOMO+2/6b664115-0b42-4262-8f05-18b7caa3d1bc>

46. Posada JA. La salud mental en Colombia. *Biomédica*. 2013; 33 (4): 497-498. doi.org/10.7705/biomedica.2214
47. Organización Mundial de la Salud. *Salud Mental*. Ginebra; 2017. https://www.who.int/topics/mental_health/es/
48. American Psychiatric Association. *What Is Depression?*. Washington; 2020 <https://www.psychiatry.org/patients-families/depression/what-is-depression>
49. González N, Martínez A, Carmona O, Viera C, Jerez D, González J. Tratamiento acupuntural para la ansiedad en la consulta de medicina tradicional. *Policlínico Baracoa*, 2010. *Panorama Cuba y Salud*. 2011; 6: 142-143. <https://www.redalyc.org/pdf/4773/477348946043.pdf>
50. Mental Health UK 2020. *Mental Health UK. What is anxiety?* <https://mentalhealth-uk.org/help-and-information/conditions/anxiety-disorders/what-is-anxiety/>
51. Andreu CE. Actividad física y efectos psicológicos del confinamiento por covid-19. *Revista INFAD de Psicología*. 2020; 2 (1): 209-220. doi: doi.org/10.17060/ijodaep.2020.n1.v2.1828
52. González S, Sarmiento O, Lozano O, Ramirez A, Grijalba C. Niveles de actividad física de la población colombiana: desigualdades por sexo y condición socioeconómica. *Biomédica*. 2014; 34:447-459. doi:10.7705/biomedica.v34i3.2258
53. Bauman AE, Reis RS, Sallis JF, Wells JC, Loos RJ, Martin BW, et al. Correlates of physical activity: why are some people physically active and others not? *Lancet*. 2012;380(9838):258-271. doi: 10.1016/S0140-6736(12)60735-1.

54. Petersen JM, Kemps E, Lewis LK, Prichard I. Promoting physical activity during the COVID-19 lockdown in Australia: The roles of psychological predictors and commercial physical activity apps. *Psychol Sport Exerc.* 2021; 56:102002. doi:10.1016/j.psychsport.2021.102002
55. Bakhsh MA, Khawandanah J, Naaman RK, Alashmali S. The impact of COVID-19 quarantine on dietary habits and physical activity in Saudi Arabia: a cross-sectional study. *BMC Public Health.* 2021;21(1):1487. doi: 10.1186/s12889-021-11540-y.
56. Manuel DG, Eddeen AB, Colley RC, Tjepkema M, Garner R, Bennett C, et al. The effect of COVID-19 on physical activity among Canadians and the future risk of cardiovascular disease. *Statcan.gc.ca.* 2021. Catalogue no. 45-28-0001. <https://www150.statcan.gc.ca/n1/en/pub/45-28-0001/2021001/article/00019-eng.pdf?st=NpISle8D>
57. Romero-Blanco C, Rodríguez-Almagro J, Onieva-Zafra MD, Parra-Fernández ML, Prado-Laguna MDC, Hernández-Martínez A. Physical Activity and Sedentary Lifestyle in University Students: Changes during Confinement Due to the COVID-19 Pandemic. *Int J Environ Res Public Health.* 2020;17(18):6567. doi: 10.3390/ijerph17186567
58. Meyer J, McDowell C, Lansing J, Brower C, Smith L, Tully M, et al. Changes in Physical Activity and Sedentary Behavior in Response to COVID-19 and Their Associations with Mental Health in 3052 US Adults. *Int J Environ Res Public Health.* 2020;17(18):6469. doi.org/10.3390/ijerph17186469
59. Watson, K.B., Whitfield, G.P., Huntzicker, G., Omura, J.D., Ussery, E., Chen, T.J., et al. Cross-sectional study of changes in physical activity behavior during the COVID-19 pandemic among US adults. *Int J Behav Nutr Phys Act.* 2021; 18(1):91. doi.org/10.1186/s12966-021-01161-4.
60. Pears M, Kola-Palmer S, De Azevedo LB. The impact of sitting time and physical activity on mental health during COVID-19 lockdown. *Sport Sci Health.* 2021; 10:1-13. doi: 10.1007/s11332-021-00791-2.

61. McBride E, Arden MA, Chater A, Chilcot J. The impact of COVID-19 on health behaviour, well-being, and long-term physical health. *Br J Health Psychol.* 2021;26(2):259-270. doi: 10.1111/bjhp.12520
62. Malta DC, Szwarcwald CL, Barros MBA, Gomes CS, Machado IE, Souza Júnior PRB, et al. El COVID-19 Pandemia y cambios en los estilos de vida de adultos brasileños: un estudio transversal, 2020. *Epidemiol Serv Saude.* 2020; 29(4): e2020407. doi: 10.1590 / S1679-49742020000400026.
63. Rodríguez-Larra A, Mañas A, Labayen I, González-Gross M, Espin A, Aznar S, et al. Impact of COVID-19 confinement on physical activity and sedentary behaviour in spanish university students: Role of gender. *Int J Environ Res Public Health.* 2021 18(2):369. doi: 10.3390/ijerph18020369
64. Bertrand L, Shaw KA, Ko J, Deprez D, Chilibeck PD, Zello GA. The impact of the coronavirus disease 2019 (COVID-19) pandemic on university students' dietary intake, physical activity, and sedentary behaviour. *Appl Physiol Nutr Metab.* 2021;46(3):265-272. doi: 10.1139/apnm-2020-0990
65. Barwais FA. Assessing physical activity and sedentary time during the COVID-19 pandemic using self-reported measurement. *Natl J Physiol Pharm Pharmacol.* 2020;10(11): 1019-1024. doi: 10.09241202001102020
66. Jacob L, Tully MA, Barnett Y, Lopez-Sanchez GF, Butler L, Schuch F, et al. The relationship between physical activity and mental health in a sample of the UK public: A cross-sectional study during the implementation of COVID-19 social distancing measures. *Ment Health Phys Act.* 2020; 19:100345. doi: 10.1016/j.mhpa.2020.100345.
67. Dziewior J, Carr L, Pierce G, Whitaker K. Physical activity and sedentary behavior in college students during the covid-19 pandemic. *Med Sci Sports Exerc.* 2021;53(8S):184-185. doi: 10.1249/01.mss.0000761204.78353.d8.
68. Ministerio de Salud y Protección Social. Resolución 3280 de 2018. Bogotá; 2018. <https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/DE/DIJ/resolucion-3280-de-2018.pdf>
69. Rey-López JP, Tomas C, Vicente-Rodríguez G, Gracia-Marco L, Jiménez-Pavón D, Pérez-Llamas F, et al. Sedentary behaviours and socio-economic status in

- Spanish adolescents: the AVENA study. *Eur J Public Health*. 2011;21(2):151-157. doi: 10.1093/eurpub/ckq035.
70. Clark BK, Winkler E, Healy GN, Gardiner PG, Dunstan DW, Owen N, et al. Adults' past-day recall of sedentary time: reliability, validity, and responsiveness. *Med Sci Sports Exerc*. 2013;45(6):1198-207. doi: 10.1249/MSS.0b013e3182837f57.
71. Barrera R. Cuestionario Internacional de actividad física (IPAQ) Revista Enfermería del Trabajo. 2017;7(2):49-54. <https://dialnet.unirioja.es/servlet/articulo?codigo=5920688>
72. Mella RF, Vinet EV, Alarcón M. Escalas de Depresión, Ansiedad y Estrés (DASS-21): Adaptación y propiedades psicométricas en estudiantes secundarios de Temuco. *Revista Argentina de Clínica Psicológica*. 2014; 23 (2): 179-190. <https://www.redalyc.org/articulo.oa?id=281943265009>
73. Barbosa S, Urrea A. Influencia del deporte y la actividad física en el estado de salud físico y mental: una revisión bibliográfica. *Katharsis*. 2018; (25):155-73. doi.org/10.25057/25005731.1023
74. Weinstein A, Koehmstedt C, Kop W. Mental health consequences of exercise withdrawal: A systematic review. *Gen Hosp Psychiatry*. 2017; 49:11-18. doi: 10.1016/j.genhosppsy.2017.06.001.
75. Bauman A, Reis R, Sallis J, Wells JC, Loos RJ, Martin BW, et al. Correlates of physical activity: why are some people physically active and others not. *Lancet*. 2012; 380 (9838):258-271. doi:10.1016/S0140-6736(12)60735-1
76. Delgado C, Mateus E, Rincón L, Villamil A. Efectos del ejercicio físico sobre la depresión y la ansiedad. *Rev colomb rehabil*. 2019;18(2):128-45. doi.org/10.30788/RevColReh.v18.n2.2019.389
77. Patricia D. Intervención fisioterapéutica en la esquizofrenia. Revisión sistemática. 2016. Tesis de pregrado. Universidad de Alcalá. (URI): <http://hdl.handle.net/10017/26998>
78. Raglin J. Exercise and mental health. Beneficial and detrimental effects. *Sports Med*. 1990; 9(6):323-9. Doi: 10.2165/00007256-199009060-00001.)

79. McDowell CP, Dishman RK, Gordon BR, Herring MP. Physical Activity and Anxiety: A Systematic Review and Meta-analysis of Prospective Cohort Studies. *Am J Prev Med.* 2019; 57 (4):545-556. Doi: 10.1016/j.amepre.2019.05.012
80. Chen P, Mao L. Coronavirus disease (COVID-19): The need to maintain regular physical activity while taking precautions. *J Sport Health Sci.* 2020; 9(2):103-104. Doi: 10.1016/j.jshs.2020.02.001.
81. Arruza JA, Arribas S, Gil de Montes L, Irazusta S, Romero S, Cecchini, JA. The impact of duration in sport and physical activity on the psychological well-being. *Rev.int.med.cienc.act.fís.deporte.* 2008; 8:171–183.
82. Botero J, Farah B, Correia M. Impact of the COVID-19 pandemic stay at home order and social isolation on physical activity levels and sedentary behavior in Brazilian adults. *Einstein.* 2021; 19: eAE6156. Doi:10.31744/einstein_journal/2021AE6156
83. Goodwin R. Association between physical activity and mental disorders among adults in the United States. *Prev Med.* 2003; 36(6):698-703. Doi: 10.1016/s0091-7435(03)00042-2.