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Awareness of World Health Organization (WHO) Physical Activity Recommendations among Adolescents in Nsukka Local Government Area, Enugu State, Nigeria

[1]Ofili, Perpetua C; & [2]Nwaiwu Nnochiri
[1]Department of Human Kinetics and Health Education, University of Nigeria, Nsukka/ [2]Department of Human kinetics and Sports Studies, Alvan Ikoku Federal University of Education, Owerri
Corresponding Author: chinyere.ofili@unn.edu.ng

Abstract

The goal of the study was to assess in-school adolescents' awareness of WHO physical activity recommendations for adolescents and to determine differences in their awareness based on school location and school type. The study used descriptive cross- sectional survey research design.Population was made up of 7740 junior and senior secondary school students in Nuskka local governmentarea (LGA) Enugu state. Instrument for data collection was questionnaire. Data were analysed using frequencies, percentages, and Chi-square test applied at the .05 level of significance.Findings show that adolescents possess low level of awareness of PA recommendations. Adolescents in urban and rural locations, as well as those in single sex and mixed sex schools also possess low level of PA recommendations. The study revealed no significant differences in awareness of PA recommendation for adolescents based on school location but, significant difference existed between school types. The study discussed the implications of adolescents' low level of awareness of PA guidelines to optimal health as well as the health cost impact on the families. To encourage adolescent PA engagement, use of multiple intervention strategies such as incorporating PA guidelines into the school curriculum, use of mass media campaign and community workshops that would cover both rural and urban schools were recommended for the Ministry of education and school administrators.

Keywords: Physical, Activity, Adolescents, Inactivity, Recommendation, Awareness, Aerobics

Introduction

Physical activity refers any movement generated by the body's musculoskeletal system that requires the use of energy for tasks including working, playing, traveling, doing housework, or engaging in leisure activities (WHO, 2022). Regular physical activity (PA) lowers the rate of illness and death and improves wellbeing. Adolescents' can benefit from it in various ways, including their physical, mental, and social health [Pedersen & Saltin, 2015; World Health Organization (WHO), 2022]. Despite these advantages, the WHO estimated that 80.3 percent of teenagers worldwide do not engage in physical activity. The WHO recommended raising PA levels for persons of all ages,

especially adolescents, in order to reap the benefits of PA. WHO recommended that adolescents engage in at least three days a week of muscle and bone-strengthening activities such as lifting weights, doing pushups and sit-ups, climbing stairs, jogging, walking (National Heart, Lung, and Blood Institute, 2022) in addition to 60 minutes of moderate-to-vigorous aerobic PA every day of the week (7 days). For adults aged 18 to 64 years WHO recommended two or more days of muscle and bone building exercises that engage all main muscle groups on two or more days of the week, in addition to 30 minutes of moderate to high intensity aerobic PA five days a week (150minutes). Aerobic activities are activities that use large muscle groups and increased heart rate and oxygen intake (Cleveland Clinic, 2024).

The WHO's recommendations for PA are intended to raise awareness of the amount of PA needed to sustain optimal health and to encourage regular PA behavior in individuals of all ages, including adolescents. According to Csikszentmihalyi (n. d.), adolescents are people between the ages of 10 and 20 who are going through a phase of growth and development between childhood and adulthood. They may have completed their official primary education and are enrolled in post-primary schools or colleges.

Studies show low levels of physical activity among adolescents worldwide, including Nigeria, despite the advantages and WHO PA recommendations (Fan & Cao, 2017; Oyeyemi, 2016 & WHO, 2022). Adolescents with low PA levels may have increased burden of diseases and medical cost (Godino, et al, 2014). Adolescents with low PA levels may not be aware of the WHO (2022) PA recommendations and guidelines. According to Gafoor (2012), to be aware means to know, to realize or interested in knowing about something, or, to know that something is important. Gafoor conceptualized awareness as the state of being informed, cognizant, conscious or knowledgeable. In this study, awareness of PA recommendations refers to being cognizant of or understanding the significance of PA guidelines. In order to take action, manage, uphold, and sustain healthy behavior toward high-quality and optimal health, awareness is essential. The degree of agreement between one's self-rated and officially approved PA levels is known as awareness of PA (Godino et al., 2014). Godino et al. emphasized that people frequently claim to be physically active when they do not meet the corresponding PA prescription for the best possible health benefit, which is likely what led to Oyeyemi's (2016) low PA level among adolescents.

Previous studies conducted worldwide to measure public awareness of the WHO PA guidelines, (et al, 2019 & Chen et al, 2023) were among adult population hence the need to focus this study on adolescents. Adolescents are transitioning into adulthood, and literature suggests that adopting inactive lifestyle at this stage may have detrimental effects on health at adult stage (Moreno, et al, 2024). Research indicates that persons who engage in regular PA are less likely to develop chronic non-communicable diseases

(NCDs). Conversely, inactivity increases the risk of NCDs, mental disorder development, stress buildup, and poor academic performance (WHO, 2022).

If adolescents are aware of the PA guidelines and the health benefits, they are more likely to comply with the recommendations (Fabunmi, 2019 & Wafi et al, 2024). High level awareness of WHO PA recommendations will facilitate PA behaviors and enhance, prolong, and promote adolescents lives. The location and kind of school (mixed or single sex) are two socio-demographic characteristics that may have a big impact on how aware adolescents are of PA guidelines. It was crucial to evaluate these factors in order to identify the subgroups that ought to be the focus of an efficient awareness campaign regarding PA guidelines.

This study was based on Weinstein's (1988) precaution adoption process model (PAPM), which states that people adopt a precaution if the projected benefits outweigh the cost and the balance looks favorable. This paradigm uses seven sequences of stages-aware, uninvolved, uncertain, decided to act, acting, maintaining action, and not acting-to help with behavior change.

Objectives of the Study

The main objective of the study was to assess WHO physical activity (PA) recommendations awareness among in-school adolescents aged 10-20 years in Nsukka LGA. Specifically the study determined:

1. proportions of in-school adolescents who were aware of WHO PA recommendation in Nsukka LGA?
2. differences in WHO PA awareness level among adolescents based on school location in Nsukka LGA?
3. differences in WHO PA awareness level among adolescents based on school type in Nsukka LGA?

Research Questions

1. What proportion of in-school adolescents were aware of WHO PA recommendations for adolescents in Nsukka LGA.
2. Does in-school adolescents awareness of PA recommendations differs according to school location in Nsukka LGA.
3. Does in-school adolescents awareness of PA recommendations differs according to school type in Nsukka LGA.

Hypotheses

In-school adolescents' level of awareness of WHO PA recommendation is independent of:

HO_1: school location at 0.05 level of significance.

HO_2: school type at 0.05 level of significance.

Methodology

***Research Design*:** Cross sectional descriptive survey research design was employed in the study. Knox, et al (2013) employed this design in a related study on lack of knowledge of physical activity guidelines in United Kingdom (UK).

***Area of the Study*:** Area of the study was Nuskka local government area (LGA). The L.G.A. has over 59 government secondary schools located in urban and rural areas. The study covered all the in-school adolescents in junior secondary school (JSS) classes 1 and 2 as well as senior secondary school

(SSS) classes 1 and 2 in government secondary schools in Nsukka LGA.

Population for the Study: The population for the study comprised of 7440 male and female students within 10-20 years in JSS1, JSS2 and SSS1, SSS2 in the 59 public schools located within urban and rural areas in Nsukka LGA who enrolled for 2022/2023 academic year. Students in JS 3 and SS 3 were not included in the study because they were busy with external examinations.

***Sample for the Study*:** Sample for the study (n = 380) was determined using Charan and Biswas (2013) formula (Z_1-$\alpha/2^2$ SD/d_2) for quantitative survey study. To guard against non response rate a 10 percent (0.1) i.e. (380 x 0.1 = 38) of the minimum required sample size was added which gave the final sample for study as 418 participants (Bartlett, et al, 2001). Multistage sampling technique was used which involved, stratifying schools into urban and rural, selecting 10 schools each from urban and rural, and drawing 10 percent of each school student's population from JSS 1and 2 and SSS 1and 2 respectively to arrive at 418 participants.

***Instrument for data collection*:** Questonnaire was used for data collection. The instrument consists of three main items and was adopted from Vaara et al (2019). The first item was a single 'Yes' or 'No' question to ascertain if they have seen, heard or read about WHO PA recommendations for adolescents. The second item was on aerobics recommendation. The third item was on muscles and bone strength recommendations (WHO, 2022). The instrument had a 2-point "Yes"/ "No" response.

***Data Collection Methods*:** A total of 418 copies of the questionnaire were distributed to respondents by hand with the permission of the Principal of each secondary school. Out of 418 copies of questionnaire distributed, 29 copies were lost due to incomplete responses and inability to return the questionnaire. The remaining 389 copies of questionnaire gave a return rate of 93.06 percent.

***Data Analysis Technique*:** Frequencies and percentages were used to find out the proportion of students who were aware of adolescents PA recommendation/guidelines. Level of awareness was in line with (Wafi et al, 2024) based on composite scores of the three items which range from 0 to 3 (awareness, aerobics, muscles and bones strengthening activity). Thus, scores were classified into three levels with a bench mark score of zero (0) as poor awareness level; score of 1 to 2 as moderate awareness level and score of 3 as high awareness level. Chi-square test of independence was used to test for differences between categorical variables with a P-value of < 0.05 as statistically significant.

Table 1: Percentages Responses on Proportion of Students Aware of WHO Physical Activity Recommendation for Adolescents

S/N	Awareness Indicators	Yes (F%)	No (F%)
1.	I have seen, heard or read about PA recommendations for adolescents	45(11.57)	344(88.43)
2	**I know that moderate to vigorous aerobic PA**		

Table 1 continued

	recommendation per week is:		
I	sixty minutes (1 hour) daily per week	81(20.82)	308(79.18)
Ii	one hundred and eighty minutes weekly1 (3 hours)	113(29.05)	276(70.96)
Iii	two hour thirty minutes (2 ½ hour) weekly	117(30.08)	272(69.93)
Iv	three hundred minutes weekly (5 hours) weekly	78(20.05)	311(125.0)
	Total Yes/No	**81(20.82)**	**308(79.18)**
3	I know that muscle and bone strengthening PA recommendation per week is		
I	once in week	133(34.19)	256(65.81)
Ii	three or more times in a week	31(7.97)	358(92.03)
Iii	four times in a week	128(32.90)	261(67.09)
Iv	every day of the week	97(24.94)	292(75.64)
	Total Yes/ No	**31(7.97)**	**358(92.03)**

N = 389; f(%) = frequency and percentage responses of all the participants

Table 1 indicates that only 11.57 percent were aware of WHO PA recommendation, 20.82 percent were aware of the required volume of aerobic activities while only 7.97 percent were aware of the required days to engage in muscles and bones strengthening activities.

Table 2: Percentages Responses on Proportion of Students Aware of WHO Physical Activity Recommendation Based on School Location

S/N	Awareness Indicators	$F(\%)_U$	$F(\%)_R$
1	I have seen, heard or read about PA recommendations for adolescents	19(12.80)	26(10.80)
2	**I know that moderate to vigorous aerobic PA recommendation per week is:**		
i	sixty minutes (1 hour) daily per week	29(19.46)	52(21.67)
ii	one hundred and eighty minutes weekly1 (3 hours)	44(29.53)	46(19.17)
iii	two hour thirty minutes (2 ½ hour) weekly	50(33.56)	88(36.66)
iv	three hundred minutes weekly (5 hours) weekly	26(17.45)	54(22.50)
	Average Yes%	**29(19.46)**	**52(21.67)**
3	I **know that muscle and bone strengthening PA recommendation per week is:**		
I	once in week	55(36.91)	70(29.17)
Ii	three or more times in a week	13(8.70)	18(7.50)
iii	four times in a week	36(24.16)	80(33.33)
iv	every day of the week	45(30.20)	72(30.00)
	Average Yes%	13(8.70)	18(7.50)

N = 149 for urban and 240 for rural; $f(\%)_U$ = frequency and percentage responses of urban schools; $F(\%)_R$ = frequency and percentage responses of rural schools

Table 2 shows that only 12.8 percent of urban and 10.8 percent of rural in-school adolescents were aware of WHO PA recommendation. For aerobics, more proportion of the rural 21.676 percent as against 19.46 percent of the urban was aware of the aerobic guideline. In muscles and bones strength activities, only 8.70 percent of the urban as against 7.50 percent of the rural adolescents

were aware of the number of days required.

Table 3: Percentages Responses on Proportion of Students Aware of WHO Physical Activity Recommendation Based on School Type

S/N	Items	$F(\%)_S$	$F(\%)_M$
1	I have seen, hear or read about PA recommendations for adolescents	19(14.30)	26(10.40)
2	I know that moderate to vigorous aerobic PA recommendation per week is:		
I	sixty minutes (1 hour) daily per week	23(17.29)	58(22.66)
Ii	one hundred and eighty minutes weekly1 (3 hours)	33(24.81)	60(23.43)
iii	two hour thirty minutes (2 ½ hour) weekly	57(42.86)	76(29.69)
iv	three hundred minutes weekly (5 hours) weekly	20(15.04)	62(24.22)
	Average Yes%	**23(17.29)**	**58(22.66)**
3	I know that muscle and bone strengthening PA recommendation per week is:		
I	once in week	51(38.35)	92(35.94)
Ii	three or more times in a week	12(9.02)	19(7.42)
iii	four times in a week	43(32.33)	75(29.30)
iv	every day of the week	27(20.30)	70(27.34)
	Average Yes%	12(9.02)	19(7.42)

N = 133 for Single sex school and 256 for mixed sex school; $f(\%)_S$ = frequency and percentage responses ofsingle sex schools; $F(\%)_M$ = frequency and percentage responses of mixed sex schools.

Table 3 shows that 14.3 percent of in-school adolescents in single sex schools as against 10.4 percent of those in mixed schools were aware of the WHO PA guidelines. More of the adolescents (22.66%) in mixed school had more awareness of the aerobics than those in single sex schools with 17.29 percent. In muscle and bone strength activities only 9.0 percent and 7.42 percent respectively of single sex and mixed sex schools were aware of the required days.

Table 4: Level of Awareness of WHO PA Recommendation by In-school Adolescents (N = 389)

Variable	Low	Moderate	High
Overall	299(76.86)	69(17.74)	21(5.40)
Urban school	118(79.2)	20(13.4)	11(7.4)
Rural school	181(75.4)	49(20.4)	10(4.2)
Single sex school	109(80.5)	16(12.0)	10(7.5)
Mixed sex school	192(75.0)	53(20.7)	11(4.3)

low = no correct answer; moderate -1 to 2 correct answers; high = 3 correct answers; urban school N = 149; Rural school N =240; Single sex school N = 133; Mixed sex school N = 256

Table 4 presents the overall responses to the three items. From the table those with low awareness scored zero in the three items. Those classified as moderate got only 1 or 2 out of the three items correct while those who had high awareness got the 3 items correct. From the Table majority 76.86 percent had

low knowledge, 17.74 percent had moderate knowledge while only 5.40 percent had high knowledge of PA recommendation for adolescents.

Table 5: Chi-square Test of Independence Verifying Differences in Awareness Levels of WHO PA Recommendation Based on School Location, and School Type (N = 389)

Variable	Low O(E)	Moderate O(E)	High O(E)	X^2	Df	P-val
Urban school	118(114.5)	20(26.4)	11(8.0)	4.511	2	.11
Rural school	181(184.5)	49(42.6)	10(13.0)			
Single sex school	107(102.2)	16(23.6)	10(7.2)	5.902	2	.05
Mixed sex school	192(196.2)	53(45.4)	11(13.8)			

N = 389; O(E) = Observed value and Expected value; X^2 = Chi-square; Df = Degree of freedom; P-val = P-value (significant value); urban school N = 149; Rural school N =240; Single sex school N = 133; Mixed sex school N = 256

Table 5 indicates no significant difference in awareness of WHO PA recommendation among adolescents based on school location, X^2 (2, n= 389) =4.51, *P* =.11, phi=.11(small effect, Cohen 1988). However, significant difference existed between school type, X^2 (2, 389)= 5.902, *P* = .05, phi = .12 (small effect Cohen 1988).

Discussion

Awareness of the WHO PA recommendations appears low with only 11.57 percent of the respondents who reported being aware (Table1). Although 20.82 percent reported being aware of the dosage recommendations of moderate-intensity physical activity, only 7.97 percent were aware of the dosage for muscles and bones strength activities (Table 1). Overall awareness level (i.e. the composite of the three items) shows low level of awareness with only 5.40 percent who reported high awareness of WHO PA guidelines (Table 4). Disparities exist across demographic characteristics (school location and school type). Those with moderate level of awareness were aware of the aerobics but lacked awareness of muscles and bones guidelines. The majority of people with low awareness did not know about the aerobics or the muscles and bones guidelines.

The result showed lower awareness of WHO PA recommendation compared to previous studies where proportion ranged from 27- 47 percent (Kay et al, 2014; Vaara et al. 2019, Hunter et al, 2014 & Chen et al, 2023). Although, these earlier studies focused on the adult population, as no previous study was on adolescents, they provide a global overview of the awareness of PA guidelines. The low level of awareness was expected given the absence of PA guidlines in school curricula and Nigeria has not implemented PA surveillance. Probably, internet use may be source of awareness of the few adolescents. Additionally, the University of Nigeria, Nsukka, located in the center of the Nsukka LGA, is home to frequent exercisers who engage in PA on a daily basis. Consequently, there is likelihood that those who were aware had either been exercising regularly or had heard about it from other active folks. There was no

difference between the urban and rural participants, which is in contrast to Chen (2017) finding among Chinese children and Warfi et al (2024) among adults in Jazan region of Saudi Arabia . However, disparities existed between the various school types which suggest a gap in their level of awareness of PA guidelines.

The overall low level of awareness of PA guidelines may be the cause of insufficient PA among adolescents reported by earlier researcher (Oyeyemi, 2016). The plausible explanation to low rates of PA could be attributed to lack of awareness of the guidelines and dose recommendation (Piercy et al, 2020 & Wafi et al , 2024). Most times people who are informed of the myriad benefits of PA tend to overestimate their PA level and exhibit less intension to increase their PA when actually they are inactive (Godino et al 2014). Individuals who were aware of the guidelines are more likely to achieve the required PA volume than those who were not (Abulaet al, 2018 & Wafiet al, 2024). The authors further stressed that raising awareness of the guidelines may not increase PA levels of those who are unaware but it can contribute to the development of PA intentions and PA behavior modification. This in no small measure helps contemplators or those considering to be active (Piercy et al 2020) to overcome insufficient PA.

Adolescents who are aware of PA recommendations are better equipped to make health-related decisions (United Nations International Children's Emergency Fund, n. d). Raising awareness can encourage the intention to start, maintain, or adopt PA activity as recommended by WHO. In line with the tenets of precaution adoption process model (PAPM), adolescents need motivational stages to attain the PA guidelines, even when they are aware of WHO PA recommendations because awareness alone does not transform to action except with a little push. According to Haas (2018) achieving stage 3 (undecided) of PAPM will facilitate progression to stage 5 (acting). This implies that creating awareness and educating the adolescents on the benefits of attaining WHO PA guidelines will facilitate initiation and adherence to it.

Conclusion

In-school adolescents in Nsukka Local Government Area lacked sufficient awareness of WHO PA guidelines, which may increase their risk of developing NCDs as well as raising health expenses. It is likely that insufficient public promotion and more efficient communication technique led to this lack of awareness. In addition, being a very critical health concern, physical education curricula in schools failed to address the WHO PA guidelines. To protect the health of adolescents who are future generations, there is an urgent need for efficient education and awareness-raising initiatives to raise the existing low level of awareness of the WHO PA recommendation among in- school adolescents.

Recommendations

1. To make in-school adolescents more aware of the importance and benefits of following the guidelines

for their health, the government should require curriculum developers to incorporate the WHO PA recommendation and its benefits into physical education and health policy.

2. Awareness campaign on WHO PA recommendation should be carried out targeting all school types both rural and urban schools through Mass media and community workshops.

References

Abula, K., Gröpel, P., Chen, K., & Beckmann, J. (2018). Does knowledge of physical activity recommendations increase physical activity among Chinese college students? Empirical investigations based on the transtheoretical model. Journal of sport and health science, 7(1), 77–82. https://doi.org/10.1016/j.jshs.2016.10.010

Bartlett, J. E., Kotrlik, J. W. & Higgins, C. C. (2001). Organizational Re search: Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal,* 2(19): 43-50.

Charan, J. & Biswas, T. (2013). How to calculate sample size for different study design in medical research. *Indian Journal of Psychological Medicine*, 35(2).

Chen, T. J., Whitfield, G. P., Watson, K. B., Fulton, J. E., Ussery, E. N., Hyde, E. T., & Rose, K. (2023). Awareness and Knowledge of the Physical Activity Guidelines for Americans, 2nd Edition. *Journal of physical activity & health*, *20*(8), 742–751. https://doi.org/10.1123/jpah.2022-0478

Chen, P. (2017).Physical activity, physical fitness, and body mass index in the Chinese child and adolescent population: An update from the 2016 physical activity and fitness in china-The youth study. *Journal of Sports Health Science*, 6(4): 381- 383.

Cleveland Clinic (2024). Aerobic exercise. https://my.clevelandclinic.org/health/articles/7050-aerobic-exercise

Csikszentmihalyi, M. (n.d.). Adolescence. https://www.britannica.com/science/adolescence

Fabunmi, A. A., Jumbo, I. S., & Oloyede, M. J. (2019). Physical exercise: Knowledge, attitude and participation of senior secondary school students of selected private schools in Ibadan North Local Government Area, OYo state (Nigeria); 2. *Health Promotion and Physical Activity*, 7(2), 9–14. DOI: https://doi.org/10.5604/01.3001.0013.2660

Fan X. & Cao Z.B. (2017).Physical activity among Chinese school-aged children: national prevalence estimates from the 2016 Physical Activity and Fitness in China—The Youth Study. *Journal of Sport Health Science,* 6: 388–394.

Gafoor, K. A. (2012). Considerations in the measurement of awareness. *National seminar on emrging trends in education*. https;//files.eric.ed.gov/fulltext/ED545374.pdf

Godino, J.G., Watkinson, C., Corder, K., Sutton, S., Griffin, S. J., & van Sluijs, E. M. F. (2014). Awareness of physical activity in healthy middle-aged adults: a cross-sectional study of associations with socio-demographic, biological, behavioural, and psychological factors. *BMC Public Health*, 14: 421.

Haas E. J. (2018). Applying the Precaution Adoption Process Model to the Acceptance of Mine Safety and Health Technologies. *Occupational health science*, *2*(1), 43–66.

Hunter, R. F., Tully, M. A., Donnelly, P., Stevenson, M., & Kee, F. (2014). Knowledge of UK physical activity guidelines: implications for better targeted health promotion. *Preventive medicine*, *65*, 33–39.

https://doi.org/10.1016/j.ypmed.2014.04.016

Kay, M. C., Carroll, D. D., Carlson, S. A., & Fulton, J. E. (2014). Awareness and knowledge of the 2008 Physical Activity Guidelines for Americans. *Journal of physical activity & health*, *11*(4), 693–698. https://doi.org/10.1123/jpah.2012-0171

Knox, E. C., Esliger, D. W., Biddle, S. J., & Sherar, L. B. (2013). Lack of knowledge of physical activity guidelines: can physical activity promotion campaigns do better?. *BMJ open*, *3*(12), e003633. https://doi.org/10.1136/bmjopen-2013-003633

Moreno, S. M., perez-Gomez, J. & Rojo-Ramos, J. (2024). Level of hnowledge of adolescents about the recommendations of World Health Organisation on physical activity and health. *IOSR Journal of Sports and Physical*, 10(6): 41-47. Doi: 10.9790/6737-10060141447

National Heart and lungs and Blood Institute (2022). https://www.nhlbi.nih.gov/health/heart/physical-activity/types

Oyeyemi, A. L., Ishaku, C. M, Onyekola, J., Wakawa, H. D., Lawn., A. Yakubu, S., & Oyeyemi, A. Y. (2016). Patterns and associated factors of physical activity among adolescents in Nigeria. *PLOSE ONE*. https://doi.org/10.371/journal.pone.o15014

Pedersen, B. K., & Saltin, B. (2015). Exercise as medicine - evidence for prescribing exercise as therapy in 26 different chronic diseases. *Scandinavian journal of medicine & science in sports*, 25 Suppl *3*, 1–72. https://doi.org/10.1111/sms.12581

Piercy, K. L., Bevington, F., Vaux-Bjerke, A., Hilfiker, S. W., Arayasirikul, S., & Barnett, E. Y. (2020). Understanding contemplators' knowledge and awareness of physical activity guidelines. *Journal of Physical Activity and Health*, 17(4): 404-411.

United Nations International Children's Emergency Fund (n.d.). https://www.unicef.org/education/skills-development

Vaara, J. P., Vasankari, T., Koski, H. J., & Kyröläinen, H. (2019). Awareness and Knowledge of Physical Activity Recommendations in Young Adult Men. *Frontiers in public health*, *7*, 310. https://doi.org/10.3389/fpubh.2019.00310

Wafi, A.M., Wadani,S. N., Daghriri, Y.Y., Alamri, A. I., Zangoti, A. M., Khiswi, A. A., Al-Ebrahim, E. Y., Jesudoss, H.J. & Alharbi, A. A. (2024). Awareness and knowledge of the physical activity guidelines and their association with physical activity levels. Sports, 12(7). https://www.mdpi.com/2075-4663/12/7/174

Weinstein N. D. (1988). The precaution adoption process. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*, *7*(4), 355–386. https://doi.org/10.1037//0278-6133.7.4.355

World Health Organisation (2022). Physical activity. https://www.who.int/news-room/fact-sheets/detail/physical-activity