



Physical Activity During Physical Education Lessons Among Omani Female Students: Levels and Correlates

Badriya Al-Hadabi^{1ABCDE}

¹Sultan Qaboos University

Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Corresponding Author: Badriya Al-Hadabi, e-mail: bhaddabi@squ.edu.om

Accepted for Publication: August 13, 2026

Published: September 29, 2026

DOI: 10.17309/tmf.v.2026.5.15

Abstract

Objectives. This study aimed to examine physical activity levels and determinants throughout physical education (PE) lessons among Omani Cycle Two female students.

Materials and Methods. A cross-sectional descriptive-analytical design was employed with 190 Cycle Two female students in Muscat Governorate's public schools, Oman. ActiGraph wGT3X-BT accelerometers were used to measure physical activity during PE lessons. Anthropometric measurements comprised body mass index (BMI) and body fat percentage. Grip strength and 30-m sprint tested physical fitness. Data analysis used descriptive statistics, Spearman's correlation, multiple linear regression, and one-way analysis of variance (ANOVA) ($p < .05$).

Results. Participants accumulated 22.72 ± 5.40 minutes of moderate-to-vigorous physical activity (MVPA) on average, indicating high levels of health-enhancing physical activity. Sprint performance, vigorous physical activity ($\rho = -.177, p = .015$) and MVPA ($\rho = -.168, p = .021$) were significantly correlated, and independently predicted MVPA ($\beta = -.234, p = .002$). Grade level also independently predicted MVPA ($\beta = -.331, p < .001$), where Grade 6 students attained the highest MVPA level ($p < .05$). However, BMI, body fat percentage, and handgrip strength had no significant association with MVPA.

Conclusions. Cycle Two female students accumulated substantial MVPA in PE. The principal correlates of MVPA were sprint performance and grade level, contrasting body composition and handgrip strength. The findings encourage learner-centred, movement-oriented PE programs, suggesting PE curriculum development and physical activity enhancement among Omani schoolgirls.

Keywords: physical education, physical activity, accelerometry, physical fitness, body composition, female students.

Introduction

Physical activity during childhood and adolescence is essential for healthy physical, psychological, and social development. Physical education (PE) helps children develop lifelong physical activity, literacy and good habits, since they spend most of their time in school. Students' moderate-to-vigorous physical activity (MVPA) is widely used as an indicator of PE lesson quality and curriculum effectiveness (Siedentop & Van der Mars, 2022; Fairclough & Stratton, 2005, 2006).

Besides these, a lot of PE lessons do not guarantee MVPA levels for students. Observational studies show that a lot of the lesson time is taken up with recommendations, management or inactivity rather than valuable movement (Greenockle et al., 1990; Simons-Morton et al., 1994). Physical activity

levels are affected by the lesson content, instructor behavior, teaching strategies, and student attributes such as age, grade level and gender.

The core curriculum in Oman concentrates on movement ability, physical fitness, healthy lifestyle, teamwork and long-term physical activity. Al-Sinani (2018) states that the PE curriculum of Cycle Two (Grades 5-7) is learner-centred, encouraging active participation and holistic student development. However, there is limited data on the physical activity levels of female Omani Cycle Two students through PE.

Children's physical activity is most closely associated with body composition and fitness. Previous studies have associated lower body fat and a healthy BMI with increased physical activity, fitness and health. Obesity, however, decreases physical activity and performance (Mota et al., 2002; Gao, 2011; Dewi, 2021). Cardiorespiratory fitness, muscle strength, flexibility and health were better in active children (Kaminska et al., 2012; Chen, 2018; Gu, 2016; Oliveira, 2017; Peralta, 2020; Yang, 2019; Adi, 2024).

Demographics also affect physical activity. International data indicate that boys accumulate more MVPA and that participation in physical activity declines with age, but the magnitude of these differences varies across settings and cultures (Trost et al., 1996; Ishii et al., 2015; Harvey et al., 2016; Viciano et al., 2019; Majcug et al., 2023). These distinctions and student PE participation are influenced by biological maturation, changing motivations, increased academic demands and more complex educational experiences. International research is growing, but there are still research gaps. Physical activity, body composition, demographics and health-related physical fitness have been studied mainly in isolation (Trost et al., 1996; Sallis et al., 2000; Ishii et al., 2015; Fairclough & Stratton, 2005; Siedentop & Van der Mars, 2022). Therefore, grade level is more than a merely demographic characteristic; it measures developmental progression as well.

Research in the Gulf countries is limited, particularly among Omani Cycle Two female students. Thus, the relationship between students' activity levels, body composition, physical fitness and grade level and whether Omani PE sessions provide sufficient health-enhancing physical activity is unknown. Although accelerometer studies have objectively assessed physical activity among schoolchildren (Pate et al., 2006), comparable evidence from Omani female students remains scarce.

Based on the previous information, this study aimed to explore the levels and associated factors of physical activity during PE lessons among Omani Cycle Two female students. In particular, it identified physical activity levels of students in PE lessons, investigated the variations based on grade level, and explored the association between physical activity, body composition indicators, and selected factors of health-related physical fitness. Relying on both the theoretical and empirical data, it was hypothesized: (H1) students would accumulate sufficient levels of moderate-to-vigorous physical activity (MVPA) during PE lessons; (H2) higher physical activity levels would be significantly associated with more favorable body composition and health-related physical fitness indicators; and (H3) physical activity levels would differ significantly according to grade level.

Materials and Methods

Participants

The Ministry of Education's latest data report shows that there are 261,804 students in Cycle Two in Omani public schools in 2024-2025. Targeted public school girls in Muscat Governorate from grades 5-7. Participants were purposively recruited from three public schools in Muscat Governorate. Six classes were included from each school (18 classes in total), comprising two Grade 5, two Grade 6, and two Grade 7 classes per school. Six female PE teachers participated in the study, with two teachers from each school involved in teaching the participating classes. The need sample size was estimated by G*Power software (Version 3.1.9.7) using one-way ANOVA with three grade level groups. Based on a medium effect size ($f = 0.25$), statistical power of 0.80, and significance level of $\alpha = .05$, we calculated a baseline sample size of 159 students (53 per grade level).

The study consisted of 190 female students; 66 from Grade 5 (34.7%), 68 from Grade 6 (35.8%), and 56 from Grade 7 (29.5%). This sample size was larger than the required sample size, and therefore the proposed analyses were powered. The study participants were, on average, 11.69 ± 0.99 years old, 146.97 ± 8.04 cm in height, 43.21 ± 13.23 kg in body weight, 19.71 ± 4.78 kg/m² BMI and $26.8 \pm 6.9\%$ body fat. Eligible participants were female Grade 5-7 students who regularly participated in PE, were physically able to complete testing, and provided parental consent and student assent. Students with conditions preventing participation, incomplete measurements, or withdrawal were excluded.

Study Design

A quantitative cross-sectional descriptive-analytical design was used to investigate physical activity levels among Cycle Two female students in PE classes, registered in Omani public schools.

Data Collection Procedures and Ethical Consideration

Anthropometric measurements were conducted after participants were asked to put on lightweight clothes and take off their shoes. Qualified researchers and PE teachers adhered to standardized testing methods under comparable conditions to a regular PE lesson. The PE lessons followed the usual 45-minute format adopted in Omani schools and were the basic instructional unit of the PE curriculum. Each lesson included theoretical and practical educational components and consisted of approximately 5-10 min warm-up, 30-35 min main educational and practical activities, and about 5 min cool-down. The classes were held under regular teaching circumstances in the schools that participated in the study and averaged 30-32 students.

Data collection was performed within the 2024-2025 academic year via standardized examinations amid physical education lessons. Moreover, ethical approval from the Research Ethics Committee of Sultan Qaboos University and administrative approval from the Ministry of Education and schools were acquired beforehand. In addition, both written informed consent forms from the parents or legal guardians of the participants and students' assent were gathered. The Ethical Committee of the Deanship of Higher Studies and Scientific Research at Sultan Qaboos University authorized the study procedure (Approval No. IG/EDU/PHED/25/02), and it was conducted per the ethical principles of the Declaration of Helsinki (World Medical Association, 2013).

Instruments

Physical Activity

In this study, children and adolescents' objectively measured physical activity was assessed using the widely used, validated ActiGraph wGT3X-BT triaxial accelerometer (ActiGraph LLC, Pensacola, FL, USA). The accelerometer was initiated with ActiLife software (Version 6.13.3) per manufacturer instructions. The equipment recorded movement in 15 s epochs to capture the periodic activity patterns of young children. All regular physical education

students had an accelerometer fixed on the right iliac crest, on an elastic belt. Accelerometer cut-points recommended by Evenson et al. (2008) that were age-specific were used in this tool to classify body movements into inactive behaviour, light physical activity, moderate physical activity and vigorous physical activity.

Anthropometric Measurements

Anthropological and body composition characteristics included height, weight, BMI, and PBFM. The students were standing upright on the analyser stage, barefoot, in light clothing and holding hand electrodes for the assessment. To ensure accurate measurements, they were told not to eat, drink or exercise before the examination. A Tanita MC-780U Plus body composition analyser (Tanita Corporation, Tokyo, Japan) measured body weight and body fat %, while a portable Seca 220 stadiometer (Seca GmbH, Hamburg, Germany) recorded standing height. Body mass was rounded to 0.1kg and height to 0.5 cm.

Calculating BMI:

$$\text{BMI} = \text{Weight (kg)} / \text{Height (m}^2\text{)}.$$

Student weight was classified as normal, overweight, or obese using Cole et al. (2000) age- and sex-specific BMI cut-off values from the International Obesity Task Force (IOTF).

Physical Fitness Components

Grip strength was measured with a calibrated handgrip dynamometer according to the EUROFIT Physical Fitness Test Battery (Council of Europe, 1988). Students stood erect and stretched their dominant hand fully parallel to the body, not touching the trunk. All participants underwent two trials, and the highest weight (kg) was analysed. Grip strength was a useful field measure of muscle strength in relation to health-related fitness. Speed was assessed by the 30-m sprint test that is valid and reliable for young children.

Students performed a maximum 30-m sprint from standing. Sprint time was recorded to the nearest 0.01s using standard testing techniques as used in previous paediatric fitness investigations (Castro-Piñero et al., 2010; Ortega et al., 2011).

Data Analysis

The data were analyzed using IBM SPSS Statistics 26.0 (IBM Corp., Armonk, NY, USA). All statistical analyses were two-sided, with significance set at $p < .05$. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to describe participant characteristics and physical activity data. The Shapiro-Wilk test was used to test normality of continuous variables. One-way analysis of variance (ANOVA) was used to compare grade-level physical activity levels, and Scheffé post hoc comparisons were used when significant differences were found. Group differences were calculated with partial eta squared (η^2), which were interpreted with Cohen's criteria. The relationship between physical activity, body composition and fitness were analyzed using Spearman's rank order correlation coefficients (ρ). Multiple linear regression determined independent factors of MVPA. Preliminary tests of the normality, linearity, homoscedasticity, independence of errors, and multicollinearity assumptions were performed. Linear regression assumptions were checked using VIF, tolerance values and residual diagnostics.

Results

Descriptive Statistics of Participant Characteristics and Study Variables (H1)

Participants accumulated a mean of 22.72 min of MVPA per PE lesson, supporting H1 (Table 1).

Table 1. Descriptive Statistics of Participant Characteristics and Study Variables by Grade Level (N = 190)

Variable	Grade 5 (n = 66) M ± SD	Grade 6 (n = 68) M ± SD	Grade 7 (n = 56) M ± SD	Overall (N = 190) M ± SD
Age (years)	10.75 ± 0.45	11.58 ± 0.47	12.95 ± 0.43	11.69 ± 0.99
Height (cm)	140.94 ± 6.02	147.55 ± 7.14	153.38 ± 5.57	146.97 ± 8.02
Weight (kg)	36.83 ± 9.20	45.24 ± 14.35	48.26 ± 12.95	43.21 ± 13.19
BMI (kg/m ²)	18.29 ± 3.84	20.50 ± 5.25	20.43 ± 4.86	19.71 ± 4.77
BF (%)	25.62 ± 5.66	27.29 ± 8.10	27.14 ± 6.30	26.80 ± 6.9
SED (Min/PE session)	3.78 ± 2.19	9.81 ± 4.70	5.56 ± 2.55	6.46 ± 4.26
LPA (Min/PE session)	5.80 ± 2.05	6.31 ± 3.22	6.57 ± 2.33	6.21 ± 2.61
MPA (Min/PE session)	3.23 ± 0.87	3.63 ± 1.15	3.01 ± 0.96	3.31 ± 1.03
VPA (Min/PE session)	18.85 ± 3.48	23.70 ± 4.84	14.86 ± 3.49	19.41 ± 5.37
MVPA (Min/PE session)	22.08 ± 3.11	27.33 ± 4.49	17.87 ± 3.66	22.72 ± 5.40
Grip Strength (kg)	15.46 ± 3.99	18.37 ± 4.29	20.96 ± 5.96	18.12 ± 5.22
30-m Sprint Time (s)	7.15 ± 1.43	6.74 ± 0.86	6.91 ± 0.85	6.93 ± 1.09

Note. N = total sample size; n = subgroup sample size; M = mean; SD = standard deviation; BMI = body mass index; BF = body fat; SED = sedentary time; LPA = light physical activity; MPA = moderate physical activity; VPA = vigorous physical activity; MVPA = moderate-to-vigorous physical activity; PE = physical education

Associations Between Physical Activity, Body Composition, and Physical Fitness (H2)

Spearman Correlation

Sprint time was negatively associated with VPA and MVPA, whereas BMI, body fat percentage, and handgrip strength were not significantly associated with physical activity (Table 2), partially supporting H2.

Table 2. Spearman's Rho Correlations Between Physical Activity, Body Composition, and Physical Fitness Variables in the Overall Study Sample (N = 190)

Correlations					
Variable		BMI	BF	GS	Sprint
SED	ρ	0.137	0.107	0.059	0.058
	Sig.	0.059	0.141	0.420	0.429
LPA	ρ	-0.085	-0.118	-0.141	0.137
	Sig.	0.242	0.106	0.052	0.060
MPA	ρ	-0.032	-0.033	-0.127	-0.014
	Sig.	0.659	0.651	0.081	0.843
VPA	ρ	0.040	0.087	0.049	-.177*
	Sig.	0.584	0.232	0.501	0.015
MVPA	ρ	0.045	0.095	0.016	-.168*
	Sig.	0.539	0.193	0.824	0.021

Note. BMI = body mass index; BF = body fat percentage; GS = handgrip strength; SED = sedentary time; LPA = light physical activity; MPA = moderate physical activity; VPA = vigorous physical activity; MVPA = moderate-to-vigorous physical activity. r_s = Spearman's rho. $p < .05$, $p < .01$.

Multiple linear regression Analysis

The results of the multiple linear regression analysis to examine the independent prediction of MVPA by body composition, physical fitness and grade level are presented in Table 3. MVPA was selected as the dependent variable as it is the main health-improving outcome of physical activity and the primary outcome of the study. The overall regression model was statistically significant, $F(5, 184) = 6.71$, $p < .001$, accounting for 15.4% of the variance in MVPA ($R^2 = .154$, adjusted $R^2 = .131$). The grade level ($B = -2.23$, 95% CI $[-3.22, -1.23]$, $\beta = -.331$, $p < .001$) and the 30-m sprint time ($B = -1.15$, 95% CI $[-1.88, -0.43]$, $\beta = -.234$, $p = .002$) were both significant independent predictors. However, body fat percentage, BMI, and handgrip strength were not significant (all $p > .05$). The results partially support Hypothesis 2, with higher MVPA being associated with better sprint performance and lower grade level.

Differences in Physical Activity According to Grade Level (H3)

Grade-level differences were significant for SED, MPA, VPA, and MVPA, but not LPA (Table 4). The largest effects occurred for MVPA ($\eta^2 = .506$), VPA ($\eta^2 = .445$), and SED

Table 3. Multiple Linear Regression Predicting Moderate-to-Vigorous Physical Activity (MVPA) from Body Composition, Physical Fitness, and Grade Level (N = 190)

Multiple linear regression Model					
Predictor	B	SE	β	p	95% CI for B
Independent Variables	GS	0.016	0.093	0.016	0.863 $[-0.17, 0.20]$
	Sprint	-1.153	0.367	-0.234	0.002 $[-1.88, -0.43]$
	BMI	0.052	0.188	0.046	0.784 $[-0.32, 0.42]$
	BF	0.105	0.122	0.134	0.390 $[-0.14, 0.35]$
	Grade level	-2.228	0.505	-0.331	< .001 $[-3.22, -1.23]$

Note. MVPA = moderate-to-vigorous physical activity; GS = handgrip strength; BMI = body mass index; BF = body fat percentage; B = unstandardized regression coefficient; SE = standard error; β = standardized regression coefficient; CI = confidence interval.

($\eta^2 = .374$). Grade 6 students accumulated significantly more MVPA than Grade 5 (MD = 5.24, 95% CI $[3.61, 6.86]$) and Grade 7 students (MD = 9.46, 95% CI $[7.76, 11.16]$), while Grade 5 also exceeded Grade 7 (MD = 4.22, 95% CI $[2.51, 5.93]$; all $p < .001$). These findings supported H3.

Table 4. One-Way ANOVA Comparing Physical Activity Variables Across Grade Levels (N = 190)

Dependent Variable	SS	F	df	p	Partial η^2	Interpretation
SED	1284.986	55.794	2	< .001	0.374	Large
LPA	18.787	1.387	2	0.252	0.015	Small
MPA	12.636	6.254	2	0.002	0.063	Medium
VPA	2433.444	75.076	2	< .001	0.445	large
MVPA	2788.301	95.861	2	< .001	0.506	large

Note. One-way ANOVA was performed using grade level (Grades 5, 6, and 7) as the independent variable. Partial eta squared (η^2) was interpreted according to Cohen's guidelines: small = .01, medium = .06, and large = .14. Pairwise comparisons were conducted using the Scheffé post hoc test when the omnibus ANOVA was statistically significant. Statistical significance was established at $p < .05$.

Discussion

The present study examined the levels and associated factors of physical activity in PE lessons among Omani female students in Cycle Two, via objectively assessed physical activity, body composition, physical fitness, and grade level. This study found substantial MVPA during PE lessons, with sprint performance and grade level emerging as the principal correlates of MVPA among Omani Cycle Two female students.

The mean of 23 minutes of MVPA per PE instruction supported Hypothesis 1. The Omani Basic Education curriculum promotes movement, active participation and lifelong health (Al-Sinani, 2018). It also allows for MVPA as an indicator of quality of PE lessons (Fairclough & Stratton, 2005, 2006; Siedentop & Van der Mars, 2022). This study differs from previous studies, which have shown that students

lose time when PE lessons do not adhere to guidelines and management (Greenockle et al., 1990; Simons-Morton et al., 1994), by showing that students were active for most of the class. This direct comparison should be treated with caution, due to differences in length of course, curriculum and method of accelerometry. The data suggest that quality PE classes can help children significantly improve their daily activity. Omani PE programmes are based on active, learner-centered education.

Sprint performance was significantly associated with both VPA and MVPA and independently predicted MVPA, whereas BMI, body fat percentage, and grip strength were not significant predictors of MVPA, partially supporting Hypothesis 2. Although the level of physical activity is decreased in obese children (Trost et al., 2001), this study suggests that teacher-directed activities give comparative opportunities for all children. High-intensity PE lessons were more associated with locomotor fitness than anthropometrics or muscle strength. Running games, relays, and other intense physical activities demand rapid force production, neuromuscular coordination, and repetitive locomotion (e.g., sprinting). Grip strength is focused upper-limb isometric strength, not lower-body locomotion; hence its lack of significance in MVPA is logically reasonable. Similar relationships between VPA and speed-related fitness were observed in young pupils by Chen et al. (2018), Kaminska et al. (2012), and Gu et al. (2016).

The regression analysis shows that sprint performance and grade level are better predictors of MVPA than anthropometrics and grip strength. Locomotor fitness, not body composition or muscle strength, seems to be important for participation in PE and active participation. Furthermore, grade-level differences in sedentary behavior, moderate physical activity, VPA and MVPA were consistent with Hypothesis 3. Specifically, 6th grade children had the highest VPA and MVPA and 5th and 7th grade children had the lowest activity levels. These findings are in line with previous studies showing an association between middle school grades and decreases in physical activity (Reeves, 2016). This non-linear development is influenced by age but also by biological maturation, motivation and educational situation. Moreover, Grade 6 children are at an intermediate stage with good physical abilities, motor competence and passion for engagement, hence intense participation in PE activities. This decline in physical activity throughout adolescence is reflected by the Lower Grade 7 levels, as academic demands, developmental changes, and increased self-consciousness become more prevalent (Trost et al., 1996; Ishii et al., 2015; Harvey et al., 2016; Viciano et al., 2019; Majcug et al., 2023). This aligns with Shervey & DiPerna (2017), where physical activity declines that are age- and grade-related are not only connected to PE but also to school contexts, including recess, implying wider developmental and behavioral changes. Even with the absence of direct investigation of these mechanisms, they are similar to the ecological and developmental frameworks, suggesting individual and environmental factor interaction impacting physical activity behavior (Sallis et al., 2000; Fairclough & Stratton, 2005; Siedentop & Van der Mars, 2022). Therefore, the findings of this study emphasize the significance of creating developmentally adequate and engaging PE classes to maintain participation in vigorous physical activities,

especially among older female students. The regression model was statistically significant but only accounted for 15.4% of the variation in MVPA, indicating relatively modest explanatory power. Therefore, students' activity level during PE is influenced by more than their physical fitness, body type and grade level. Such factors may further contribute to the differences, such as the lesson materials, teaching methods, teacher behavior, class organization, interaction with peers, motivation, school facilities and activities outside of school. Thus, the model should not be regarded as a full account of MVPA. Rather, it should be seen as evidence that both grade level and sprint success are part of a bigger educational and behavioral picture.

In practice, PE teachers should reduce instruction and transition times, group students into small groups or activity stations, and use movement-based assignments to reduce waiting time. Task difficulty should be appropriate to students' fitness and motor skills. Running games, relays, circuits, and other developmentally appropriate activities can maintain MVPA. Older female students with lower MVPA need enhanced interest and variety of activities to remain engaged. Periodic objective assessment of lesson activities may also assist teachers in evaluating MVPA opportunities.

Strengths of this study methodology include objective accelerometer-based measures in this study, examination of physical activity, fitness, body composition and grade level simultaneously and the focus on Cycle Two female students, but there are limitations. First, cross-sectional studies do not permit causal inferences between physical activity and parameters studied. The female participants were sampled from public schools in Muscat Governorate; thus, the results may not be generalizable to male students, private institutions and other regions. Third, the results might not be representative of students' daily physical activity, since it only measures PE class activity. Lastly, extracurricular sports, socioeconomic level, school facilities, and instructor qualities were not considered. Longitudinal and school-based interventional studies with more diverse populations are therefore needed to assess causal relationships and strategies for increasing MVPA in childhood and early adolescence.

Conclusion

Participating students acquired comparably prominent levels of MVPA in PE lessons, which demonstrated the provision of significant opportunities for health-improving physical activity. The sole significant physical fitness-associated factor and independent predictor of MVPA was sprint performance. Moreover, BMI, body fat percentage, and grip strength did not have a significant correlation with the levels of physical activity. In addition, on the level of grade differences that were identified, Grade 6 students attained the highest levels of VPA and MVPA, which in turn emphasized the impact of developmental and educational factors on the students' engagement. The findings offer new evidence on the correlates of PE active participation, adding to the restricted data on objectively assessed physical activity among female students in the Gulf region. Moreover, they encourage the continuation of the implementation of learner-centred, movement-oriented programs, with an emphasis on the significance of prominent engagement

among older students. Overall, the present study offers data aiding educators, curriculum developers, and policymakers in enhancing PE programs to foster long-term physical activity and healthier lifestyles for Omani schoolgirls.

Ethics Approval

The study was authorized by the Ethical Committee of the Deanship of Higher Studies and Scientific Research at Sultan Qaboos University under the (Approval No. IG/EDU/PHED/25/02), and it was conducted per the ethical principles of the Declaration of Helsinki (World Medical Association, 2013).

Informed Consent

Both written informed consent forms from the parents or legal guardians of the participants and students' assent were gathered.

Data Availability Statement

Data are available from the corresponding author upon reasonable request.

AI Transparency Statement

The authors used AI-assisted tools for language editing only and take full responsibility for the content.

Funding

The research is financed by the Deanship of Higher Studies and Scientific Research, Sultan Qaboos University, No. IG/EDU/PHED/25/02

Acknowledgements

The researchers would like to thank the Deanship of Higher Studies and Scientific Research at the Sultan Qaboos University for funding this research.

References

- Siedentop, D., & Van der Mars, H. (2022). *Introduction to physical education, fitness, and sport* (9th ed.). Human Kinetics.
- Fairclough, S. J., & Stratton, G. (2005). Physical activity levels in middle and high school physical education: A review. *Pediatric Exercise Science*, 17(3), 217–236. <https://doi.org/10.1123/pes.17.3.217>
- Fairclough, S. J., & Stratton, G. (2006). Effects of a physical education intervention to improve student activity levels. *Physical Education and Sport Pedagogy*, 11(1), 29–44. <https://doi.org/10.1080/17408980500467613>
- Greenockle, K. M., Lee, A. A., & Lomax, R. (1990). The relationship between selected student characteristics and activity patterns in a required high school physical education class. *Research Quarterly for Exercise and Sport*, 61(1), 59–69. <https://doi.org/10.1080/02701367.1990.10607478>
- Simons-Morton, B. G., Taylor, W. C., Snider, S. A., Huang, I. W., & Fulton, J. E. (1994). Observed levels of elementary and middle school children's physical activity during physical education classes. *Preventive Medicine*, 23(4), 437–441. <https://doi.org/10.1006/pmed.1994.1059>
- Al-Sinani, Y. (2018). Comprehending the cycle two of the basic education learning physical education: Literature review of the physical education Omani curriculum. *Assiut Journal of Sport Science and Arts*, 2018(6), 333–344. <https://doi.org/10.21608/ajssa.2018.264211>
- Mota, J., Santos, P., Guerra, S., Ribeiro, J. C., & Duarte, J. A. (2002). Differences of daily physical activity levels of children according to body mass index. *Pediatric Exercise Science*, 14(4), 442–452. <https://doi.org/10.1123/pes.14.4.442>
- Gao, Z., Oh, H., & Sheng, H. (2011). Middle school students' body mass index and physical activity levels in physical education. *Research Quarterly for Exercise and Sport*, 82(1), 145–150. <https://doi.org/10.1080/02701367.2011.10599732>
- Dewi, R. C., Rimawati, N., & Purbodjati. (2021). Body mass index, physical activity, and physical fitness of adolescence. *Journal of Public Health Research*, 10(2), 2230. <https://doi.org/10.4081/jphr.2021.2230>
- Kaminska, I., Mihailova, A., & Bernâne, A. (2012). Physical activity and its relation to health-related physical fitness in students. *Ovidius University Annals, Series Physical Education and Sport/Science, Movement and Health*, 12(2), 256–263. <https://analefefs.ro/anale-fefs/2012/issue-2/pe-autori/26.pdf>
- Chen, W., Hammond-Bennett, A., Hypnar, A., & Mason, S. (2018). Health-related physical fitness and physical activity in elementary school students. *BMC Public Health*, 18, 195. <https://doi.org/10.1186/s12889-018-5107-4>
- Gu, X., Chang, M., & Solmon, M. A. (2016). Physical activity, physical fitness, and health-related quality of life in school-aged children. *Journal of Teaching in Physical Education*, 35(2), 117–126. <https://doi.org/10.1123/jtpe.2015-0110>
- Oliveira, L., Braga, F., Lemes, V., Dias, A., Brand, C., Mello, J., Gaya, A., & Gaya, A. (2017). Effect of an intervention in physical education classes on health related levels of physical fitness in youth. *Revista Brasileira de Atividade Física & Saúde*, 22(1), 46–53. <https://doi.org/10.12820/rbafs.v.22n1p46-53>
- Peralta, M., Henriques-Neto, D., Gouveia, É. R., Sardinha, L. B., & Marques, A. (2020). Promoting health-related cardiorespiratory fitness in physical education: A systematic review. *PLOS ONE*, 15(8), e0237019. <https://doi.org/10.1371/journal.pone.0237019>
- Yang, D., Zhu, X., Haeghele, J. A., Wilson, P. B., & Wu, X. (2019). The association between health-related fitness and physical activity during weekdays: Do fit students exercise more after school? *Sustainability*, 11(15), 4127. <https://doi.org/10.3390/su11154127>
- Adi, S., Hanief, Y. N., Widiawati, P., Panganiban, T. D., & Muslim, B. A. (2024). Association between physical fitness, body fat, BMI, and physical activity level with learning outcomes in elementary school students. *International Journal of Disabilities Sports and Health Sciences*, 7(2), 335–341. <https://doi.org/10.33438/ijds.1382608>
- Trost, S. G., Pate, R. R., Dowda, M., Saunders, R., Ward, D. S., & Felton, G. (1996). Gender differences in physical activity and determinants of physical activity in rural fifth

- grade children. *Journal of School Health*, 66(4), 145–150. <https://doi.org/10.1111/j.1746-1561.1996.tb08235.x>
- Ishii, K., Shibata, A., Adachi, M., Nonoue, K., & Oka, K. (2015). Gender and grade differences in objectively measured physical activity and sedentary behavior patterns among Japanese children and adolescents: A cross-sectional study. *BMC Public Health*, 15, 1254. <https://doi.org/10.1186/s12889-015-2607-3>
- Harvey, S., Smith, M. L., Song, Y., Robertson, D., Brown, R., & Smith, L. R. (2016). Gender and school-level differences in students' moderate and vigorous physical activity levels when taught basketball through the tactical games model. *Journal of Teaching in Physical Education*, 35(4), 349–357. <https://doi.org/10.1123/jtpe.2016-0089>
- Viciano, J., Mayorga-Vega, D., & Parra-Saldías, M. (2019). Adolescents' physical activity levels on physical education and non-physical education days according to gender, age, and weight status. *European Physical Education Review*, 25(1), 143–155. <https://doi.org/10.1177/1356336X17706683>
- Majcug, M., Vidranski, T., & Vrbik, I. (2023). Age and gender differences in the physical activity levels of pupils in elementary school. In L. Gómez Chova, C. González Martínez, & J. Lees (Eds.), *ICERI2023 Proceedings* (pp. 8700–8705). IATED. <https://doi.org/10.21125/iceri.2023.2220>
- Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine & Science in Sports & Exercise*, 32(5), 963–975. <https://doi.org/10.1097/00005768-200005000-00014>
- Pate, R. R., Stevens, J., Pratt, C., Sallis, J. F., Schmitz, K. H., Webber, L. S., Welk, G., & Young, D. R. (2006). Objectively measured physical activity in sixth-grade girls. *Archives of Pediatrics & Adolescent Medicine*, 160(12), 1262–1268. <https://doi.org/10.1001/archpedi.160.12.1262>
- World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*, 310(20), 2191–2194. <https://doi.org/10.1001/jama.2013.281053>
- Evenson, K. R., Catellier, D. J., Gill, K., Ondrak, K. S., & McMurray, R. G. (2008). Calibration of two objective measures of physical activity for children. *Journal of Sports Sciences*, 26(14), 1557–1565. <https://doi.org/10.1080/02640410802334196>
- Cole, T. J., Bellizzi, M. C., Flegal, K. M., & Dietz, W. H. (2000). Establishing a standard definition for child overweight and obesity worldwide: International survey. *BMJ*, 320(7244), 1240–1243. <https://doi.org/10.1136/bmj.320.7244.1240>
- Council of Europe. (1988). *Eurofit: Handbook for the Eurofit tests of physical fitness*. Committee for the Development of Sport.
- Castro-Piñero, J., Ortega, F. B., Artero, E. G., Girela-Rejón, M. J., Mora, J., Sjöström, M., & Ruiz, J. R. (2010). Assessing muscular strength in youth: Usefulness of standing long jump as a general index of muscular fitness. *Journal of Strength and Conditioning Research*, 24(7), 1810–1817. <https://doi.org/10.1519/JSC.0b013e3181dddb03d>
- Ortega, F. B., Artero, E. G., Ruiz, J. R., España-Romero, V., Jiménez-Pavón, D., Vicente-Rodríguez, G., Moreno, L. A., Manios, Y., Béghin, L., Ottevaere, C., Ciarapica, D., Sarri, K., Dietrich, S., Blair, S. N., Kersting, M., Molnar, D., González-Gross, M., Gutiérrez, Á., Sjöström, M., & Castillo, M. J. (2011). Physical fitness levels among European adolescents: The HELENA study. *British Journal of Sports Medicine*, 45(1), 20–29. <https://doi.org/10.1136/bjsm.2009.062679>
- Trost, S. G., Kerr, L. M., Ward, D. S., & Pate, R. R. (2001). Physical activity and determinants of physical activity in obese and non-obese children. *International Journal of Obesity*, 25(6), 822–829. <https://doi.org/10.1038/sj.ijo.0801621>
- Reeves, C. (2016). *Physical activity differences related to gender and grade level in middle school students* [Master's thesis, Winthrop University]. Digital Commons @ Winthrop University. <https://digitalcommons.winthrop.edu/graduatetheses/27>
- Shervey, S. W., & DiPerna, J. C. (2017). Engagement in physical activity during recess: Gender and grade level differences in the elementary grades. *Journal of Physical Activity and Health*, 14(9), 677–683. <https://doi.org/10.1123/jpah.2014-0499>

Фізична активність оманських учениць під час уроків фізичного виховання: рівні та кореляти

Бадрія Аль-Хадабі¹ABCDE

¹ Університет Султана Кабуса

Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 8 с., 4 табл., 32 джерела.

Мета дослідження. Це дослідження мало на меті вивчити рівні фізичної активності та детермінанти під час уроків фізичного виховання (ФВ) серед оманських учениць другого ступеня навчання.

Матеріали та методи. У роботі було застосовано крос-секційний описово-аналітичний дизайн; вибірку дослідження становили 190 учениць другого ступеня навчання державних шкіл провінції (мухафази) Маскат, Оман. Для вимірювання фізичної активності під час уроків ФВ використовувалися акселерометри ActiGraph wGT3X-BT. Антропометричні вимірювання включали визначення індексу маси тіла (ІМТ) та відсотка жирової маси в організмі. З метою оцінки

фізичної підготовленості застосовували тести на силу стискання кисті (динамометрія) та біг на 30 метрів. Статистичний аналіз даних проводився з використанням описової статистики, кореляції Спірмена, множинної лінійної регресії та одно-факторного дисперсійного аналізу при рівні значущості ($p < .05$).

Результати. Учасниці дослідження в середньому накопичували 22.72 ± 5.40 хвилини фізичної активності помірної та високої інтенсивності (ПВФА), що свідчить про високі рівні корисної для здоров'я рухової активності. Результативність спринту, фізична активність високої інтенсивності ($r = -.177$, $p = .015$) та ПВФА ($r = -.168$, $p = .021$) статистично значущо корелювали між собою, а також виступали незалежним предиктором ПВФА ($\beta = -.234$, $p = .002$). Клас навчання також виявився незалежним предиктором ПВФА ($\beta = -.331$, $p < .001$), причому учениці 6-х класів продемонстрували найвищий рівень ПВФА ($p < .05$). Проте ІМТ, відсоток жирової маси в організмі та сила стискання кисті не мали статистично значущого зв'язку з ПВФА.

Висновки. Учениці другого ступеня навчання акумулювали значний показник ПВФА на уроках ФВ. Основними корелятами ПВФА виявилися результативність у спринті та клас навчання, на відміну від компонентного складу тіла та сили стискання кисті. Отримані результати обґрунтовують доцільність упровадження учнівсько-центрованих та рухово-спрямованих програм ФВ, що свідчить на користь модернізації навчальних планів із ФВ та підвищення фізичної активності серед оманських школярів.

Ключові слова: фізичне виховання, фізична активність, акселерометрія, фізична підготовленість, склад тіла, учениці.

Information about the Authors:

Al-Hadabi Badriya: bhaddabi158@gmail.com; <https://orcid.org/0000-0001-7285-9007>; Department of Physical Education and Sports Sciences, Faculty of Education, Sultan Qaboos University, Al Khoudh, Muscat 123, Sultanate of Oman.

Cite this article as: Al-Hadabi, B. (2026). Physical Activity During Physical Education Lessons Among Omani Female Students: Levels and Correlates. *Physical Education Theory and Methodology*, 26(5), 977-984. <https://doi.org/10.17309/tmf.2026.5.15>

Received: 20.07.2026. Accepted: 11.08.2026. Published: 29.09.2026

This work is licensed under a Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0>)