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SELF REPORTED PHYSICAL ACTIVITIES AND EUROFIT PERFORMANCES ON THE ACTIVE UNIVERSITY STUDENTS

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ABSTRACT. ***Background***: Physical activity (PA) can attenuate the health risks associated with elevated body mass index (BMI), but its impact is heterogeneous and appears to depend on intensity, dose, and concurrent dietary change. ***Objective***: To synthesize recent evidence on PA, BMI and fitness relationships and to test whether vigorous PA predicts superior fitness outcomes in a cohort of physically active university students. ***Methods***: Twenty-nine students (23 men, 6 women; *M* age = 18.82 ± 1.71 years) reported weekly PA (vigorous/moderate MET-min·week^{-1}) and completed fitness tests (standing broad jump, 10×5 m shuttle run, sit-ups/30 s, sit-and-reach). BMI was classified using standard cut points. Pearson correlations examined links between PA intensity, anthropometrics, and performance. ***Results***: Most participants reported high PA ($n = 26$). BMI status was predominantly normal weight ($n = 20$). Significant associations were observed for height with standing broad jump ($r = .60$, $p = .001$); vigorous PA with shuttle-run time ($r = -.38$, $p = .043$) and sit-ups ($r = .40$, $p = .030$); and sit-ups with both standing broad jump ($r = .51$, $p = .005$) and shuttle-run time ($r = -.48$, $p = .008$). Moderate PA and flexibility showed no meaningful relationships with performance. ***Conclusions***: Vigorous, sustained PA and core endurance align with faster, stronger, and more powerful performance profiles, whereas moderate PA appears insufficient on its own. These findings parallel contemporary literature indicating that PA benefits are dose dependent and amplified when paired with nutritional and behavioural support. Future work should incorporate objective PA monitoring, larger and more diverse samples, and longitudinal designs to clarify causal pathways and optimal PA thresholds.

Keywords: Physical activity; fitness; university students; body mass index; Eurofit.

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INTRODUCTION

Global increases in obesity and in phenotypes such as normal-weight obesity highlight the limitations of body mass index (BMI) as a sole indicator of health risk. While moderate-to-vigorous physical activity (MVPA) is universally recommended, adherence remains low, particularly among individuals with elevated BMI. Contemporary evidence shows that PA reduces morbidity and mortality even when weight loss is modest, but effect magnitude depends on the dose and intensity of activity and on concurrent dietary change. Moreover, associations between PA, BMI, and fitness are inconsistent across ages and tests, with several studies reporting weak or non-linear patterns (Zhang et al., 2025). Against this backdrop, the present study (a) probes how vigorous PA relates to key fitness outcomes in a cohort of physically active university students, and (b) interprets these findings within a mixed body of recent supportive and critical evidence. To situate our work, we next trace the recent literature on PA, BMI and fitness links, emphasizing both convergent trends and contested results.

Conceptual Background

Substantial evidence indicates that regular physical activity is critical for preventing type 2 diabetes, cardiovascular disease, and several common cancers (World Health Organization 2020; Lee et al., 2012). Nowadays physical inactivity represents the fourth leading cause of poor health and global mortality (Gherman et al., 2021).

Recent work converges on a simple but nuanced storyline. First, BMI alone cannot capture risk because phenotypes like normal-weight obesity demonstrate that excess adiposity and poor fitness can coexist with a “normal” BMI (Jacob et al. 2024). Physical activity (PA) therefore functions as a key modifier of risk rather than a cure-all: consistent MVPA reduces all-cause and cardiovascular mortality in adults with obesity by roughly one fifth, yet active individuals with higher BMI still retain some excess risk compared with active peers of normal BMI. The size of PA’s benefit depends on dose, intensity, and maintenance. Post-hoc analyses from Look AHEAD show that sustaining higher daily volumes of PA often indexed by steps or MVPA minutes helps preserve weight loss; when intensity dips or activity wanes, benefits recede (Huang et al. 2024). Across age groups, the PA–BMI–fitness relationship is not linear: fitness peaks in the normal-BMI range among university freshmen and declines at both under- and overweight extremes, while in schoolchildren, participation in extracurricular sport appears to buffer BMI-related declines in fitness (Guo et al. 2024; Aniśko et al. 2025). Intervention trials reinforce this pattern. Digital or hybrid programs can dramatically improve adherence (e.g., 37 % vs. 5 % guideline achievement at 46 weeks), but BMI change is often modest without concurrent dietary modification; large cross-sectional data likewise indicate that most of exercise frequency's impact on abnormal BMI is mediated by diet (Kariuki et al. 2023; Zhang et al. 2025). Finally, studies that report null or weak associations typically rely on self-reported PA, small samples, or fitness tests less sensitive to PA dose (e.g., flexibility vs. power), conditions that can dilute true effects (Gatti et al. 2023). In sum, the literature supports a model in which sustained, higher-intensity PA yields modest but reliable gains in BMI and functional capacity, particularly when paired with nutrition support an interpretive frame that guides the present study of highly active university students.

MATERIAL AND METHODS

Participants

Twenty-nine students (23 males, 6 females; *M*age = 18.82, *SD* = 1.71) from a Faculty of Physical Education and Sport participated in the study. Second-year students enrolled in courses taught by the authors were invited to take part in a study designed to examine the relationship between self-reported leisure-time physical activity and performance on a series of tests included in the Eurofit test battery.

Participation was voluntary, and all students provided informed consent prior to inclusion in the study. No participants were excluded, as all questionnaires were completed in full and all subjects voluntarily took part in the physical fitness testing.

Measures

Self-reported weekly PA was categorized (high vs. moderate). BMI categories were determined using standard cut points (underweight, normal weight, overweight, obesity). Fitness tests included: standing broad jump (SBJ), 10×5 m shuttle run (s), sit-ups/30 s (repetitions), and sit-and-reach (cm). Pearson correlations examined relationships among PA (vigorous and moderate MET-min/week) and fitness outcomes, as well as among anthropometrics (height) and performance.

Data analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 19.

Pearson's correlation coefficient was used as the primary statistical method to examine the relationships between anthropometric variables, such as height, and performance in several tests from the Eurofit test battery. The same statistical procedure was also applied to assess the association between the intensity of self-reported leisure-time physical activity and the Eurofit tests included in this study.

The level of statistical significance adopted for all analyses was $p \leq 0.05$.

RESULTS

Most participants ($n = 26$) reported high weekly PA; three reported moderate PA. BMI distribution: 20 normal weight, 7 overweight, 1 obese, 1 underweight. Compared with the same period last year, 12 students perceived lower fitness, 7 perceived higher fitness.

Our data show a statistically significant positive correlation between participants' height and standing broad jump performance ($r = .60$, $p = .001$) (Table 1).

Table 1. Pearson Correlation between students' Height and Standing Broad Jump

		Height	**Standing broad jump**
Height	Pearson Correlation	1	.600**
	Sig. (2-tailed)		.001
	N	29	29
Standing broad jump	Pearson Correlation	.600**	1
	Sig. (2-tailed)	.001	
	N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Our data reveal a significant negative correlation between vigorous physical activities and the time achieved in the 10×5 m shuttle run test ($r = -.37$, $p = .04$) (Table 2).

Table 2. Pearson Correlation between Vigorous Physical Activities and 10×5 m Shuttle Run (s)

		Vigorous physical activities MET-min/week	10x5m Shuttle run/sec
Vigorous physical activities MET-min/week	Pearson Correlation	1	-.378*
	Sig. (2-tailed)		.043
	N	29	29
10x5m Shuttle run/sec	Pearson Correlation	-.378*	1
	Sig. (2-tailed)	.043	
	N	29	29

*. Correlation is significant at the 0.05 level (2-tailed).

Between vigorous physical activities and sit-ups performed from the supine position, there is a significant positive correlation (r = .40, p = .03) (Table 3).

Table 3. Pearson Correlation between Vigorous Physical Activities and Sit-ups/30 s

		Vigorous physical activities MET-min/week	Sit-ups/ 30 sec
Vigorous physical activities MET-min/week	Pearson Correlation	1	.404*
	Sig. (2-tailed)		.030
	N	29	29
Sit-ups/30 sec	Pearson Correlation	.404*	1
	Sig. (2-tailed)	.030	
	N	29	29

*. Correlation is significant at the 0.05 level (2-tailed)

Our data highlight a significant positive correlation between abdominal/ iliopsoas/rectus femoris strength and lower-limb strength (triple-extension chain) involved in the standing broad jump (r = .50, p = .005) (Table 4).

Table 4. Pearson Correlation between Sit-ups/30 s and Standing Broad Jump

		Sit-ups/30 sec	Standing broad jump
Sit-ups/30 sec	Pearson Correlation	1	.505**
	Sig. (2-tailed)		.005
	N	29	29
Standing broad jump	Pearson Correlation	.505**	1
	Sig. (2-tailed)	.005	
	N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Abdominal/iliopsoas/rectus femoris strength influences running speed; there is a statistically significant negative correlation between the two variables (r = -.48, p = .008) (Table 5).

Table 5. Pearson Correlation between Sit-ups/30 s and 10×5 m Shuttle Run (s)

		Sit-ups/30 sec	10x5m Shuttle run/sec
Sit-ups/30 sec	Pearson Correlation	1	-.480**
	Sig. (2-tailed)		.008
	N	29	29
10x5m Shuttle run/sec	Pearson Correlation	-.480**	1
	Sig. (2-tailed)	.008	
	N	29	29

**. Correlation is significant at the 0.01 level (2-tailed).

Significant correlations emerged between height and SBJ (r = .60, p = .001), vigorous PA and shuttle-run time (r = −.38, p = .043), vigorous PA and sit-ups (r = .40, p = .030), sit-ups and SBJ (r = .51, p = .005), and sit-ups and shuttle-run time (r = −.48, p = .008). No significant correlations were found between vigorous PA and SBJ, or between moderate PA and shuttle-run, sit-ups, mobility, or sit-and-reach.

DISCUSSION

Discussion is the action of interpreting the results. The relationships and extrapolations that could be derived from the results are clearly expressed. The two central elements of the discussion are the following: to indicate what the findings mean and how they relate to what was known until then. Use of verb tenses in the present tense. Avoid ambiguous phrases such as: "maybe if... then"; "I could... yes... then" so as not to mislead the reader from the importance of his work. The central finding of this study is that vigorous PA and core endurance are systematically linked with speed, agility, and explosive power, whereas moderate PA showed no clear associations. This pattern converges with recent meta-analytic work that underscores the importance of MVPA for health-risk reduction, yet it also mirrors reports of modest or null effects when PA is insufficiently intense or unsupported by dietary change. Our significant correlations between sit-ups, shuttle-run time, and standing broad jump performance echo biomechanical expectations and align with studies in youth and adult cohorts that connect muscular endurance and PA with functional fitness (Aniśko et al. 2025). Conversely, the absence of relationships for moderate PA and flexibility replicates "con" findings where PA measurement method, small sample size, or specific test choice attenuated observable effects. These mixed results likely reflect measurement limitations (self-reported PA; Kariuki et al. 2023; Zhang et al. 2025), dietary mediation, and statistical power constraints. Practically, interventions should pair vigorous PA with nutrition support and behavioural scaffolds (e.g., digital adherence tools) to achieve durable BMI and fitness gains. Future research should employ objective PA monitoring, larger and more diverse samples, and longitudinal designs to specify causal pathways and dose thresholds. Vigorous, sustained activity is beneficial, yet its impact is greatest when integrated with nutritional support and behavioural scaffolds.

CONCLUSIONS

Our synthesis of recent literature and the present student sample converges on three central points. First, engaging in sustained, especially vigorous, physical activity is reliably linked with healthier BMI profiles and superior performance on strength, speed, and power-oriented fitness tests. Second, these benefits are meaningful but typically modest in magnitude and are influenced by contextual factors dietary habits, behavioral support, sex-specific responses, and the particular tests used to operationalize "fitness." Third, even when BMI does not shift substantially, higher physical activity levels are associated with improved health trajectories, including reduced long-term morbidity and mortality. The correlations observed in our cohort mirror this pattern: vigorous activity aligned with faster shuttle run times and greater muscular endurance, while core strength related to explosive power and speed. Yet moderate activity showed no clear associations, underscoring that intensity and dose matter. Given the small, self-selected sample and reliance on self-report for activity, future research should incorporate objective monitoring, larger and more diverse cohorts, and longitudinal designs to clarify causal pathways and thresholds. Interventions that pair physical activity with nutritional guidance and supportive environments are likely to yield the most durable changes in both BMI and functional fitness.

AUTHOR CONTRIBUTIONS

All the authors contributed equally to the writing of the manuscript. All authors have read and agreed to the published version of the manuscript.

CONFLICT OF INTEREST

There are no conflicts of interest to declare concerning this study.

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