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Analyses of Health Status Indicators and Physical Fitness Level of Medical Students from Targu Mures

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Abstract: *The current paper summarizes the health status correlated with physical fitness of students from the University of Medicine, Pharmacy, Science and technology "George Emil Palade" from Targu Mures. A total of 301 university students aged between 18-24 years old voluntarily participated in the research. Health status and physical fitness level were investigated based on (1) anthropometric measurements (height, waist girth and hip girth); (2) bioelectrical impedance (body mass index, weight and body fat percentage); (3) fitness level (30m running speed, standing long jump, sit up, trunk extension). The data were processed with SPSS 22.0 for windows. Descriptive statistics, Independent Samples T Test and bivariate correlations were performed. Findings demonstrate normal limits in terms of BDI for 71.79% and 61.79% normal limits for body fat percentage according to age. Additionally, it was found associations between health indicators and physical fitness.*

Keywords: *physical activity; students; motor behavior; health status; anthropometrics.*

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Literature review

The transition from high school to student life can be a real challenge for some young people. There are studies that suggest a decrease in physical activity during the university studies of medical students (Brehm et al., 2016; MacLean et al., 2016; Majra, 2013). Young people can learn bad habits such as tobacco and alcohol consumption, irregular meals, increased consumption of fast food, which can have an influence on their health (Mitić, 2011; Peuker et al., 2006; Wagner & Andrade, 2008). Decreased phys ical activity could lead to decreased physical fitness (Chen et al., 2020).

According to the report of the World Health Organization (WHO), physical inactivity is a risk factor for health, along with smoking, obesity, and hypertension. Inadequate physical activity is not only associated with an increased fat mass percentage but also causes a decrease in relative muscle mass (Dewi et al., 2021). Adherence to a healthy lifestyle, regular physical activity can dramatically reduce mortality, with risk directly related to cardiovascular disease, diabetes and obesity (Wilf-Miron et al., 2021).

Physical education (PE) at all levels has a vital role in establishing positive lifestyle behaviors and particularly in improving fitness (Sandor et al., 2010). The benefits of physical activity on health and quality of life are well known (strengthens bones and improves muscle strength and resistance, reduces stress, anxiety and frustration, improves blood circulation, helps control appetite, etc.) (Fagaras et al. 2015; Janssen & Leblanc, 2010; Muntaner-Mas et al., 2022).

In order to determine certain indicators of the state of health of an individual, a series of anthropometric measurements (height, weight, girths) are carried out according to the International Standards for Anthropometric Assessment (Esparza-Ros et al., 2022) and inserted into various calculation formulas allow to obtain some indexes by which it is possible to determine the body composition of an individual (Bonilla et al., 2020). Waist girth (WG) is directly related to visceral fat and has stronger associations with health-risk indicators; an abdominal girth greater than 102 for men and more than 88 for women is considered a very high risk for coronary diseases (Shen et al., 2006; Goetzel et al., 2017).

Indicators of the health status of the population are the body mass index (BMI) and body fat percentage (BF%) (Edwards et al., 2019; Grant et al., 2014). BMI is calculated by dividing a person`s weight in kilograms by the square of their height in meters. The resulting number is then categorized into different ranges, such as underweight, normal weight, overweight and obesity, providing a general indication of the individual`s

body fat and associated health risks such as coronary heart disease, diabetes, etc. BF% may be a more suitable indicator for detecting obesity (Macek et al., 2020) being associated with metabolic dysregulation regardless of body weight (Vanitallie et al., 1990). Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health (WHO, 2018). In most countries worldwide, obesity is a major public health challenge (Ng et al., 2014).

Fitness is defined in the health context as a state of good health or physical condition, primarily as a result of exercise and proper nutrition (Grant et al., 2014). Fitness is widely recognized as a strong marker of health-related outcomes in both childhood and adulthood, as well as an important determinant of current and future health status (WHO, 2018). Regular physical activity among university students not only enhances cardiovascular health but also positively correlates with academic performance (Redondo-Flores et al., 2022).

Research on physical activity among students is topical because young people are at the beginning of adult life and any imbalance can affect the later life of the adult (Nierdermeier, 2018).

The purpose of the study was to analyses the level of fitness correlated with the health status of students from the "George Emil Palade" University of Medicine, Pharmacy, Science and Technology from Targu Mures.

Material and methods

The study participants consisted of medical students from "George Emil Palade" University of Medicine, Pharmacy, Science and Technology from Targu Mures. In total, 352 students from medical specialization, such us medicine, pharmacy, nursing, dentistry were recruited to the research. All participants gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Commission of "George Emil Palade" University of Medicine, Pharmacy, Sciences and Technology. The inclusion criteria were the study year, respectively students enrolled in the first and second year study. Out of total number, 3 declined to attend the evaluation of the state of health and fitness level. After testing, 48 participants with incomplete data (either health measurements or physical fitness tests) were excluded from the research group. Finally, complete data regarding 301 participants (N=212 female, 70.4%; N=89 male, 29.6%). Characteristics of the participants' recruitment process shown in Figure 1.

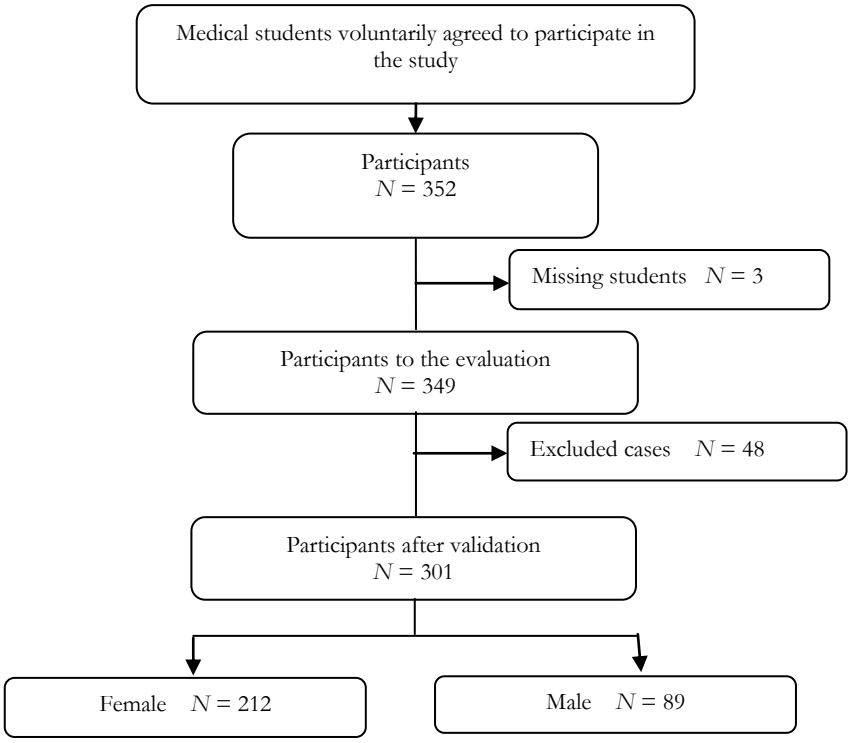

Figure 1. Characteristics of the participants

Each participant was given a series of anthropometric measurements, such as: height (H), waist girth (WG), hip girth (HG). To predict a person's state of health, the body mass index (BMI), [26] and the waist to hip ratio (WHR) are most often used. Using the Bioelectrical Impedance (BI) method, body fat is shown as a percentage of body weight. We used OMRON BF 511 device to calculate weight (W), and Body Fat Percentage (BF%) for each student. Interpretation of the health indicators are shown in the table 1.

Table 1. Normative data for health indicators

Body Mass Index (BMI)				
<18.49		Underweight		
18.5 – 24.9		Normal weight		
25.0 – 29.9		Overweight		
30.0-34.9		Obesity clase I		
35.0 – 39.9		Obesity clase II		
>40		Obesity Clase III		
Body fat percentage (BF%)				
	Underfat	Healthy	Overfat	Obese
Male	≤8.0	8.1 – 19.9	20.0 – 24.9	≥25
Female	≤21.0	21.1 – 32.9	33.0 – 38.9	≥39
Waist to Hip Ratio (WHR)				
	Low risk	**Moderate risk**	**High risk**	
Male	<0.95	0.96 -1.00	>1.00	
Female	<0.8	0.81 – 0.85	>0.86	
Waist Girth (WG)				
	Low risk	**High risk**	**Very high risk**	
Male	< 94 cm	94-102 cm	>102 cm	
Female	<80 cm	80 – 88 cm	>88 cm	

Fitness refers to the ability to perform physical activities with vigor and alertness, without excessive fatigue and with sufficient energy. It includes components such as cardiovascular endurance, muscular strength and endurance, flexibility and body composition (Skinner et al., 2015). The capacity to carry out work against a resistance is called muscular strength and speed refers to the ability to perform a movement within a short period of time.

To carry out the research, each student went through a series of physical tests to determine the fitness level. Before carrying out the tests, each participant performed a substantial warm-up to prevent accidents. At

the same time, each participant was explained the test procedure and the method of execution of each test. These tests were:

(a) *30 m speed running* (30mSR) to evaluate speed. From behind the starting line, each participant covers a distance of 30m at the highest speed. The best performance from two attempts is recorded (MacKenzie, 2005).

(b) *Standing long jump* (SLJ) to determine explosive muscle strength of the lower body. The subject is behind a line marked on the ground, with feet shoulder-width apart. A two foot take-off and landing is used, with swinging of the arms and bending of the knees to provide forward drive. The subject attempts to jump as far as possible, landing on both feet without falling backwards. The measurement is taken from take-off line to the nearest point of contact on the landing (back of the heels). Each subject has 3 attempts, the best of them being scored (http://www.topendsports.com/testing/tests/longjump.html).

(c) *Sit up for 30 sec* (SIT UP) to assessment the abdominal strength. The subject is lying on his back, on the mattress, with his legs bent at the knees and slightly apart, hands behind his head. At the signal, he quickly lifts the trunk up to the level of the knees and exhales, then descends with a straight back to the level of the mattress and inhales. The duration of the test is 30 seconds. The test is performed only once and the number of repetitions is noted. The normative data for Sit Up test are presented in table 4 (https://www.topendsports.com/testing/tests/home-situp.htm).

(d) *Trunk extension for 30 sec* (TE) to assessment the back strength. The subject is lying on his face on the mattress, with hands behind his head. At the signal, the participant perform as many back extensions as he can in 30 seconds. The test is performed only once and the number of repetitions is noted (Ortega et al., 2018).

(e) *Harvard Step Test* (HST) - is a maximal effort test, based on measuring the heart rate during the recovery period after the effort. It is generally used to study the behavior of the cardiovascular system during intense efforts. To the rhythm of the metronome, the subject performs ascents and descents on the effort ladder (h = 45 cm), at a rate of 30 steps/minute for 5 minutes. Immediately after the effort, the pulse is determined in 3 periods, each of 30 seconds, as follows: in the first minute after the effort: the first 30" (0-30"), this will be pulse number 1 (P1); in the second minute after the effort: the first 30" (1'00"-1'30"), this will be pulse number 2 (P2); in the third minute after the effort: the first 30" (2'00"-2'30*), this will be pulse number 3 (P3). The fitness index score is then determined by the following equations (http://www.physio-pedia.com/Harvard_Step_Test):

$$\text{Fitness Index} = (100 \times 300) / (2 \times \Sigma(P1+P2+P3) \quad (1)$$

Interpretation of the results of fitness tests are shown in the table 2.

Table 2. Normative data for fitness level

30m SR (sec)						
	Excellent	Above average	Average	Below average		Poor
Male	<4.0	4.0 - 4.2	4.3 - 4.4	4.5 - 4.6		>4.6
Female	<4.5	4.5 - 4.6	4.7 - 4.8	4.9 - 5.0		>5.0
SLJ (cm)						
	Excellent	Very good	Above Average	Average	Below average	Poor
Male	>250	241-250	231 – 240	221 – 230	211 – 220	191 – 210
Female	>200	191-200	181 – 190	171 – 180	161 – 170	141 – 160
SIT UP						
Male	>30	26-30	20 - 25	17-19		<17
Female	>25	21-25	15-20	9-14		<9
TE (no)						
	Excellent	Above average	Average	Below average		Poor
Male	>30	26-30	20 - 25	17-19		<17
Female	>25	21-25	15-20	9-14		<9
HST						
	Excellent	Good	Average	Below average		Poor
	>96	83-96	68-82	54-67		<54

The objectives of the study consisted of:

- Assessment of the health status of the participating students;
- Assessment of the fitness status of participating students.

The research hypotheses of the study were intuitively established as follows:

H1: There are correlations between anthropometric measurements and BMI, BF% and WHR

H2: There are correlations between the state of health and the fitness level of the research participants.

H3: There are significant differences according to gender in terms of health status and fitness index

Results

Table 3 shows the descriptive statistics of the participants in terms of anthropometric measurements in relation by gender.

Table 3. The differences obtained by the students of the experimental group in the two tests

	Gender	N	Mean	SD
Height	M	89	1.77	.077
	F	212	1.65	.059
Weight	M	89	71.25	11.44
	F	212	57.63	8.95
WG	M	89	76.96	9.11
	F	212	70.42	7.59
HG	M	89	95.71	9.73
	F	212	92.89	8.61

Statistical analyses for health status indicators (BMI, BF%, WHR), differentiated by gender, are presented in table 4.

Table 4. Health status analyses

	Gender	N	Mean	SD	SE Mean	*p*
BMI	M	89	22.6375	2.75817	.29237	.000*
	F	212	21.1025	3.02902	.20803	
BF%	M	89	15.6393	5.45133	.57784	.000*
	F	212	27.8330	6.55424	.45015	
WHR	M	89	.8055	.06750	.00716	.000*
	F	212	.7586	.04775	.00328	

A Pearson correlation (r) was applied to determine the correlations between variables in the health indicators and anthropometric measurement. A p-value under 0.05 was considered statistically significant. The item

analysis was performed using Pearson correlation coefficients, and the associations were interpreted as not existing ($r = 0$), very weak ($0.00 < r < 0.10$), weak ($0.10 \leq r < 0.30$), moderate ($0.30 \leq r < 0.50$), strong ($0.50 \leq r < 0.70$), very strong ($0.70 \leq r < 1$), or perfect ($r = 1$), according to the value of r (Marôco, 2018). The data were analyzed by gender. In table 5 are presented the results for male and in table 6 are presented the results for women.

Table 5. Bivariate correlation between anthropometrics and health indicators (male)

	BMI	BF%	WHR	H	W	WG	HG
BMI	1	.635**	.228**	-.080	.882**	.826**	.792**
BF%		1	.045	-.038	.571**	.540**	.582**
WHR			1	-.108	.158*	.494**	-.101
H				1	.393**	.173*	.274**
W					1	.841**	.857**
WG						1	.813**
HG							1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 6. Bivariate correlation between anthropometrics and health indicators (female)

	BMI	BF%	WHR	H	W	WG	HG
BMI	1	.408**	.178	.207	.848**	.698**	.672**
BF%		1	.031	.061	.327**	.308**	.338**
WHR			1	.195	.234*	.532**	-.193
H				1	.689**	.482*	.408**
W					1	.780**	.722**
WG						1	.725**
HG							1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

After analyzing the data, we can say that there are statistically significant correlations ($p<0.05$, $p<0.01$) for both males and females between the anthropometric measurements performed and the evaluated health indicators. This confirms hypothesis H1 of the study.

To determine the fitness level of the medical students we applied 4 tests: 30mRS, SLJ, SITUP, TE and HST. The results obtained were presented in table 7.

Table 7. Fitness level analyses

	Gender	N	Mean	SD	SE Mean	*p*
30mRS	M	89	4.48	.42	.044	.000*
	F	212	5.05	.62	.043	
SLJ	M	89	207.85	17.61	1.86	.000*
	F	212	176.82	33.34	2.29	
SITUP	M	89	25.26	3.47	.36	.007*
	F	212	21.97	4.07	.28	
TE	M	89	33.78	6.09	.64	.008*
	F	212	31.70	6.03	.41	
HST	M	89	82.01	10.39	1.10	.148*
	F	212	80.179	9.901	.680	

*Independent Sample T Test

Making correlation between the health and fitness indicators differentiated by gender (table 8, table 9) we observe that there are statistically significant correlations between them. All the results obtained confirmed **H2** *There are correlations between state of health and fitness level.*

Table 8. Bivariate correlation between health and fitness indicators (male)

	BMI	BF%	WHR	30mSR	SLJ	SITUP	TE	HST
BMI	1	.408**	.178	.323**	-.257*	-.173	-.301**	-.330**
BF%		1	.031	.441**	-.289**	-.173	-.142	-.233*
WHR			1	.115	.008	.041	.024	.134
30mSR				1	-.727**	-.470**	-.255*	-.306**
SLJ					1	.331**	.411**	.216*
SITUP						1	.351**	.361**
TE							1	.383**
HST								1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 9. Bivariate correlation between health and fitness indicators (female)

	BMI	BF%	WHR	30mSR	SLJ	SITUP	TE	HST
BMI	1	.635**	.228**	.199**	-.082	-.107	-.193**	-.244**
BF%		1	.045	.348**	-.263**	-.136*	-.241**	-.180**
WHR			1	.056	-.063	-.123	-.038	-.001
30mSR				1	-.682**	-.451**	-.279**	-.426**
SLJ					1	.458**	.336**	.315**
SITUP						1	.570**	.221**
TE							1	.258**
HST								1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Discussions

Academic year offer to students a series of challenges both in terms of maintaining an optimal state of health, academic and social responsibilities as well as maintaining an optimal level of fitness (Gestsdottir et al., 2021; Kassim et al., 2020).

According with the data, most of the students are within normal limits in terms of BMI (71.76%), 14.61% are underweight, 12.62% are overweight and 0.99% are obese. Similar results were presented by other researchers (Brehm et al., 2016; Jensen et al., 2014). But BMI does not differentiate lean and fat masses (Watson, 2019).

Body fat consist of essential body components such as nerve tissues, bone marrow and organs including membranes. Additionally, there is storage fat which serves as an energy reserve that accumulates when excess energy is ingested and decrease when more energy is expended than consumed. At young male adults total body fat percentage are 12%-15%, and 25% – 28 % for young female (Heo et al., 2014). Statistical analysis indicates that 14.95% of student population have a low percentage of fat, 61.79% fall within normal limits according to age, and 19.93%, respectively 3.32%, have a high and very high percentage of fat. For prevalence of overweight and obesity, BF% is slightly lower than BMI (Watson, 2019), students with higher BMIs and higher % body fat were more likely to exhibit higher cardio-metabolic risk (Heo et al., 2014).

The WHR looks at the proportion of fat stored on the body around the waist and hip and measure of fat distribution and give information about shape of body (Jeukendrup & Gleeson, 2004). The apple shape of the body indicates a distribution of fat around the waist, which increases the risk for cardiovascular and metabolic diseases, compared to the pear shape of the body which indicates a distribution of fat around the pelvis. Regarding the WHR report of our students, we can say that 89.7% present a low risk, 8.30% moderate risk and 1.99% present increased risk of developing cardiovascular diseases, diabetes, hypertension and certain types of cancer.

Large waist girth (WG) indicates visceral adiposity which is associated with cardio-metabolic risk (American College of Cardiology, 2014; 2023; Tchernof, 1996; de Koning, 2007). In our study group, the majority 91.02% present low risk of health, 6.31% moderate risk and 2.65% high risk of health regarding the values of the waist girth.

The **H1** of the study was to determine the various correlations between anthropometric measurements and calculated health indices. From the data analysis we can see that in men BMI correlates positive and very strongly with body weight (W) (r=.882), with WG (r=.826) and with HG (r = .792), and has a positive strong correlation with BF % (r = .635), but does not correlate with WHR. BF% correlates strongly with body weight (r=.571) with abdominal circumference (r = .540) and with pelvic circumference (r=.582), but does not correlate with the rest of the parameters. There is a moderate relationship between WHR and abdominal circumference (r = .494). In women, BMI correlates positive very strongly with weight (r=.848) and has strong links with abdominal circumference (r=.698) and pelvic circumference (r=.672). At the same time, there is a relationship of moderate intensity between BMI and BF% (r=.408). There are links of moderate intensity between BF% and weight (r=.327), WG (r=.308) and WH (r=.338). In female students, WHR correlates strongly with WG (r=.532). In a study conducted on adolescents (Browning et al., 2010) a statistically significant correlation was found between BF% and anthropometric measurements. Several authors have shown interest in estimating body composition and fat distribution in adults using anthropometric measurements determining the various relationships between them (da Cunha et al., 2021; Kavak et al., 2014; Radetti et al., 2021; Radetti et al., 2019). Based on the results obtained, we can state that **H1** of the study was confirmed - *There are relationships between health indices and anthropometric measurements.*

Regular physical activity is an important component of a healthy lifestyle and helps to keep the body fit. Physical fitness refers to the overall health and well-being of your body, encompassing factors such as

cardiovascular endurance, muscular strength, flexibility, agility. It is achieved through regular exercise, proper nutrition, and adequate rest, contributing to improved physical and mental health.

To assess the students' fitness level we used a battery of 5 standardized tests: 30mSR to evaluate speed, SLJ to determine explosive muscle strength of the lower limb, SITUP to assessment the abdominal strength, TE to assessment the back strength, HST to study the behavior of the cardiovascular system during intense efforts, some of them also used by other authors (Griban et al., 2020; Pituk & Cagas, 2019; Jourkesh et al., 2011).

At the 30mSR, 19.6% have excellent results, 10.63% have above average, 8.63 have average results, 13.28 are below average and 47.84 have poor results. After analyzing the data for gender we found that male subjects performed better results than female with a mean = 4.485, SD=.4220, is bigger with t=-7.885 for significance p =.000.

At SLJ test, 15.61% obtained excellent results, 5.46 obtained very good results, 8.63% above average, 15.28 have average results, 15.61% have below average and 39.20%have poor results. Analyzing the results between gender male subjects performed better results than female with a mean = 207.85, SD=17.613, which is bigger with t=8.30 for significance p =.000.

At SITUP test, 14.61% have excellent results, 40.53% have above average results, 41.86% have average results and 9% obtained below average results. At this test male subjects performed better results than female with a mean = 25.26, SD=3.472, which is bigger with t=6.672 for significance p =.000.

At TE test, 81.39% from participants obtained excellent results, 14.61% have above average results and 3.98% obtained average results, and from comparation between male and female we found that female perform better than male with mean = 31.70, SD = 6.034, t = 2.705 for significance p = .007.

At HST from all participants at the study 5.64% obtained excellent results, 39.53% have good results, 48.83% have average results and 5.98% obtained poor results. Applying t test we found that the result are not statistical significance, between male and female p = .148.

The analysis of the obtained data showed that the physical fitness level of male students was significantly better than that of females. The same results was reported by other researchers (Griban et al., 2020; Mohar, Norfazilawati & Edawaty, 2020). Based on the results obtained, we can state that **H3** of the study was confirmed - *There are differences according to gender in terms of health status and fitness index.*

The second hypothesis of the study was to determine the various correlations between the state of health and the fitness level of the research participants. From the data analysis we can see that there are some statistical significant correlation of different intensities between health indicators and physical fitness.

At male participants, between BMI and 30mSR there is a positive correlation of moderate intensity (r = .323), with SLJ and there is a negative relationship of weak intensity (r =-257), there is no correlation with the SIT UP test and with the TE tests and HST there is a negative correlation of moderate intensity (r = -.301 respectively r=-330). Between BF% and fitness tests there is a positive correlation with moderate intensities with 30mSR (r= 441) and with SLJ and HST there is a negative significant correlation (r=-.289 and r=-.233). WHR is the health parameter which is not correlated with any physical fitness test.

At female participants between BMI and 30mSR there is a positive correlation of weak intensity (r = .199), with TE and HST there is a negative relationship of weak intensity (r =-193, respectively r = -244), and for BF% there is a correlation It is positive of moderate intensity with 30mSR (r= .348) and with the SLJ and TE tests there is a negative correlation of weak intensity (r = -.263 respectively r=-241).

Research has shown that these measures of body composition and health status (BMI, BF%, WHR) can impact an individual's ability to perform certain physical activities. Understanding the relationships between anthropometric measures and physical performance is crucial for optimizing fitness assessments and tailoring training programs. Research by Hermassi et al. (2020) investigated the association between BMI and sprint performance in athletes. The study found a moderate negative correlation between BMI and 30m sprint speed, indicating that individuals with lower BMI tended to exhibit faster sprint times. This suggests that a leaner body composition may contribute to improved acceleration and speed over short distances.

The previous studies found a negative correlation between BMI and muscular strength performance, indicating that higher BMI was associated with decreased performance in muscular endurance strength (Kung et al., 2020; Liao et al., 2013; Kwiecinski et al., 2018). The negative correlation between BMI and explosive power (SLJ) was also reported in other studies for male and female participants (Kung et al., 2020; Lopes et al., 2019).

Fitness capacity therefore decreased progressively as the BMI increased. These results correlate with other studies that researched the same variables (Jaafari, 2012; Akre & Bhimani, 2015).

These shows the associations between health indicators with physical fitness, offering valuable insights into the impact of body composition on physical performance. So, the second hypothesis of the study, H2 - *There are correlations between the state of health and the fitness level of the research participants,* was confirmed.

In a study by on the young population in Norway regarding BMI and physical activity, they concluded that the majority of young Norwegians do not meet the WHO recommendations regarding physical exercises, and the prevalence of obesity is increasing (Grasdalsmoen et al., 2019).

As future healthcare professionals, the health status and fitness index of medical students can serve as a reflection of their understanding and commitment to promoting health and wellness. By prioritizing their own health, they can serve as positive role models for their patients and communities.

Conclusions

The results of the study allow us to state that students who participate in regular physical activities have better results than those with sedentary behaviors. All the hypothesis of the study were confirmed:

H1: *There are correlations between anthropometric measurements and BMI, BF% and WHR*

H2: *There are correlations between the state of health and the fitness level of the research participants.*

H3: *There are differences according to gender in terms of health status and fitness index*

Males obtained better results in physical tests compared to females.

The health status and fitness index of medical students are influenced by their lifestyle choices, including dietary habits, sleep patterns, and stress management. Encouraging healthy lifestyle behaviors through education and access to wellness programs can positively impact their overall health and fitness.

In conclusion, while medical students dedicate themselves to the study of healthcare, their own health and fitness often take a backseat. Recognizing the importance of addressing this issue through targeted interventions and educational initiatives is essential for cultivating a healthier future generation of healthcare professionals.

The findings from this research contribute to practitioners and researchers to deeply investigate the potential mechanism between health indicators and physical fitness.

These results should determine a more active health promotion campaign among students.

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