



Full Length Research Paper

The relationship among body mass index of primary mathematics teacher candidates and their score in University entrance exam and problem solving skills

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Abstract

The aim of this study was to determine the relationship among the body mass index of primary mathematics teacher candidates and their score in university entrance exam and problem solving skills. The sample composed of 267 teacher candidates who get their education in different grades at Dokuz Eylül University, Buca Faculty of Education, and Primary Mathematic Education Department in the fall of 2012-2013 education year. The data in the research was obtained via personal information from which indicates participants' height, weight and score in university entrance exam, and inventory indicating problem-solving skills. Pearson correlation was used while analyzing the data. The results has shown that the candidates whose body mass indexes are between low mass values have higher scores in university entrance exam and problem solving skills than the ones whose body mass indexes are between normal and over mass values. Moreover, there was a meaningful difference between males' body mass indexes and their scores in university entrance exam and whole candidates' body mass indexes and their scores in university entrance exam. However, there was not a meaningful difference between the scores in university entrance exam of the candidates who are between low, normal and over mass indexes and their problem solving skills.

Keywords: Problem Solving Skill, Primary Mathematic Education, Body Mass Index, Score in University Entrance Exam.

INTRODUCTION

In recent years which the era of information has been experienced, various research and improvement studies about the increasing of the quality of education have been carried out. The main aim in these applications is to provide the proper learning environment by indicating the factors facilitating learning when education and instruction are handled with their various dimensions. Within this context, it is possible to mention an education process which changes humans' behaviors (Varış, 1998). However, it is not possible that the activities of instruction which have dynamic and mobile structures are kept under the control by educators in terms of practical and institutional matters even though the process of education which is hard to control with whole components is constructed on the basis of research products

(Yenilmez, 2010). For instance, students' not having a healthy body build and body mass index is a difficult process which is controlled. Thus, various problems have nowadays been encountered on the issue of the habit of healthy and balanced nutrition in many countries and lots of illness due to malnutrition has been occurred. For this reason, the countries which want to have a healthy youth have been in the research of developing their health policy. Efficient government policies especially about struggle with obesity have been conducted in both our country and developed countries.

"Turkey Struggle and Control Program with Obesity (Overweight)" has adopted a broad-based and multi-sector approach. For this reason, the study extensively prepared were evaluated by the workshop arranged on the date of 08.07.2008 and the presenters of all state institutions and organizations like health, sport, education, transportation, municipality or finance, the presenters of international institutions, the academicians

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from medicine, nutrition and dietetic, physiotherapy and rehabilitation, and food engineering departments, and the presenters of food industry from private sector, consumer associations and other non-governmental organizations” (Health Ministry, 2010, p. 28).

Nowadays, obesity has not been only problem of the developed countries but also shown its effects in developing ones (Rosner et al. 1998). In this respect, it is tried to control increase in weight by determining the proportion between the individuals’ body mass indexes and their height and weight. In addition to this, via the education which is given to the students in schools, TV programs, posters, promotional videos, pictures and public spots; it is desired to construct a conscious generation and take precautions against obesity by determining the students’ body mass indexes. Obesity has recently taken place in the most significant problems of both developed and developing countries. Obesity briefly is that body mass comes up the desired level according to the height as a result of over increase in the proportion between fat mass of the body and lean body mass (URL-4). The obesity in Turkey is %11,2 in boys and %9.4 in girls according to a research which was carried out between 9-17 aged children. This percentage is higher in the children who have higher socio economic status (Korkut et al., 2004c).

The body mass index is a parameter showing whether an individual’s weight is normal according to his height or not. The body mass index is calculated with the proportion of weight to the square of height (kg/m^2) (Aranceta, 2001). It is a criterion indicating the relationship between height and weight and used in evaluation of adiposity (Baysal et al., 1999). The score found with the body mass index is evaluated between determined scales.

- 0-18.4 (Thin): It shows that we are not at the proper weight according to our height, you are thin.
- 18.5-24.9 (Normal): It shows that we are at the proper weight according to our height.
- 25.0-29.9 (Overweight): It shows that our weight is excessive our height. If the necessary precautions are not taken, the situation of being overweight leads the obesity which is a risk factor for lots of illness.
- 30.0-34.9 Fat (Obese)-I. Degree: It is a signal of that our weight is excessive our height in other words, we are fat.
- 35.0-44.9 Fat (Obese)-II. Degree: It is a signal of that our weight is excessive our height in other words, we are fat.
- 45.0 and over: Over Fat (Over Obese)-III. Degree: It is a signal of that our weight is excessive our height in other words, we are fat (URL-1).

Having a healthy body means having a healthy thinking system. Nutrition is source of the body and mind is of the soul. We get the results of the things which we gave to our body (URL-2). Health not only supports our body but also is significant for the wellbeing of mind.

Recently, various studies have been conducted about the factors affecting the students’ success in math. The teachers’ behaviors, the teaching methods, strategy and techniques, learning environments, the teachers and students’ psychological problems, the family environment, circle of friends, physiological features and so on are some of these variables. Şermin (1975) has put forward that the students’ failure is not only due to their selves but also environmental factors have also equal importance on the success. Moreover, the students’ skills, body and mental health, motivation, the degree of maturity and readiness, attendance and participation to the classes, being the success level of class above or below the student’s level, the student’s not having any friends or duty in the class are among the reasons of the failure (Razon, 1987). The variables of learning negatively or positively affect the individual’s learning situation, so indirectly his success level (Uluğ, 1999).

As stated above, the existence of various factors affecting the learning success has necessitated the various researches devoted to the education of math which has become a problem. Math is one of the most difficult courses which is learned and comprehended (Akin, 1990; Fidan, 1994). In this respect, the teachers should not evaluate the students’ success only according to whether they can solve some problems or not (Smith, 2000). The problem solving skill which has been learned and developed since preschool period has been learned since childhood and developed during school years (Miller and Nunn, 2001). As the education is considered as a problem solving process, it is expected from the students to be decent problem solvers (Serin and Derin, 2008). A great number of studies have been encountered about problem solving in the literature. It is seen that the studies about the health concern of the problem solving skills which were handled in various variables have hardly been carried out.

An important factor causing the students’ success and problem solving skills in math is not having a healthy body. The academic success is affected by many significant factors which are not “mental”. Motivation, anxiety, family features, socio-economic features, being the conditions of school and education insufficient, general environment features, nutrition and health conditions have their places among these (Özgüven, 1998). According to Saygı (1989); Oktay and Güven (1998), the factors that may affect the individual positive or negative about math are his age, development level, interest and needs, intelligent level, health, the environment which he lives in, the teacher factor, the age of starting school and the manner towards math (cited in Aydın and Doğan, 2012).

The exams carried out to determine the success are mostly tests in our country. One of these is the exam which has been prepared by OSYM (The Centre of Assessment, Selection and Placement) since 1974. The students’ scores in the exam and secondary education success score are evaluated according to their choices of

Table 1. Distribution of Sample According to Grade, Gender and Age Variables

Variables	Subcategories	N	%	Total
Grade	1	68	25.468	267
	2	82	30.712	
	3	74	27.715	
	4	43	16.105	
Gender	Female	198	74.157	267
	Male	69	25.843	

higher education programs and the quotas separated to these programs. One of the desired significant features of these exams is predictive validity because the aim of these exams is to select the ones whose probability of being successful is higher than others taking the exams in further steps (education, job and so on) (Özden, 2007). The exam which is used for the placement to the universities was changed as YGS (Transition to Higher Education Exam) and LYS (Undergraduate Placement Exam) in 2010 and has been still continued to be applied. The general applied system was called as The System of Selection and Placement of Students (OSYS), the first phase of the exam as Transition to Higher Education Exam (YGS) and the second phase as Undergraduate Placement Exam (LYS). The individuals who have completed the secondary education successfully are subjected to YGS. The proficiency for higher education is evaluated via this exam. The students can be placed to only distance education and two-year-degree programs with their YGS scores. The right to be able to take LYS which is necessary to be able to be placed in undergraduate programs is given by the score in YGS. Exam in test format are given, which requires basic level Turkish, Math, Social and Physical Sciences (URL-3).

When all are taken into consideration, the most important process of being a knowledge society is preparing the healthy individuals for the future. Such a process is significant for both individual and social developments. In this respect, it is crucial to prepare a healthy education environment by determining the all variable which will affect the students' development and learning. For this reason, the content of the problems which the students have encountered during their education should be predicted well. These problems are caused from either sometimes learning environment or sometimes the instructor's quality or sometimes the application of lesson materials or sometimes the learner. According to Long (2000:76-100), the factors affecting the students' academic achievement can be grouped as psychological, physical or social ones. Some of these variables are related with individual differences (cited in Okur et al., 2011). All these differences construct the factors which can affect the students' problem solving skills and success in tests like selection exams.

The aim of this study is to determine the relationship among the body mass index of primary school mathematics teacher candidates and their score in university entrance exam and problem solving skills. When the literature is searched, non-existence of a study like the current one makes the study necessary. This question is looked for an answer in a study carried out for this aim: Is there a relationship among the body mass index of primary school mathematics teacher candidates and their score in university entrance exam and problem solving skills?

METHOD

Research Design

Developmental research method from descriptive researches was used in the study. These kind of studies are carried out for aim of observing the beginning, the direction, the rate and pattern of development or the signs of regressions in the development and the interaction among the factors affecting the development (Uysal, 1974). This model aims to be revealed how a phenomenon, event or subject matter changes or develops in a certain time (Cohen, Manion and Morrison, 2007).

Research Sample

267 students who get their education at different grades at Dokuz Eylül University, Buca Faculty of Education, Primary Mathematics Education Department in 2012-2013 education year fall semester. Distribution of the sample according to grade, gender and age variables was like in Table 1.

Data Collection Tool

Personal information from which indicates students' height, weight and scores in university placement exam and Problem Solving Inventory (PSI) are used as data

collection tool in the research study. Problem Solving Inventory developed by Heppner and Petersen (1982) and "Problem Çözme Envanteri" (Problem Solving Inventory) whose Turkish version is adapted by Şahin, Şahin and Heppner (1993) are used. Problem solving inventory is applied to the voluntary students. The application for each group lasts for 18-20 minutes.

Calculation of Body Mass Index

The information about the students' height and weight were gathered by information form in order to calculate body mass index. The necessary precautions were taken for the students who had hesitation about their height and weight. The height measuring rod which has intervals in centimeters for the calculation of the students' height (till 220 centimeter) and weighing machine (till 180 kilogram) for the calculation of weight were kept available. Online calculation formula was used in order to indicate body mass index for each student. The calculation sheet was used in the link (<http://vucut-kitle-endeksi.hesaplama.net/>) for this. The body mass indexes were automatically calculated after the value of the students' weight and height had been entered. There was the information about which scales the students' body mass indexes have been. The students who have the scores among fat (obese) I. and II. degree and over fat were not among the ones whose body mass indexes were calculated. Thus, the study was carried out with the scores of thin, normal and overweight students.

The Problem Solving Inventory

The Problem Solving Inventory (Form A (PSI); Heppner, 1988; Heppner & Petersen, 1982) is a tool containing 32 items like Likert which was constructed in order to determine the people's problem solving skills and their perceptions related to problem solving strategies (Heppner, 1988). The inventory in fact contains 35 items but 9th, 22nd and 29th items were not included in scoring. The answers which can be given to the items change as behave like that), 4 (sometime behave like that), 5 (rarely behave like that) and 6 (absolutely not agree). The scores which can be obtained from the inventory show variance between 32 and 192; (32-80 the highest level, 81-192 the lowest level). The low score which is gathered from the inventory means that the individual has perceived his problem solving skill positive and the high score means that the individual has perceived himself negative about his problem solving skill. When the scores gathered from sub-items which survey the attitudes to problem solving manners which can be indicated as positive in grading the sub-items, have been decreasing it is perceived as related manners used much more. When the grades gathered

from sub-items which survey the problem solving attitudes (hasty attitude-avoider attitude) indicated as negative-ineffective have been decreasing it is thought that the desired attitudes are used much less (Ferah, 2000).

6 factors were encountered as a result of factor analyzes of the study of adaptation to Turkish by Şahin, Şahin and Heppner (1993). The reliability of these six factors were indicated as: the reliability of the items in hasty attitude subcategory (13,14,15,17,21,25,26,30,32) .78, the reliability of the items in considering attitude subcategory (18,20,31,33,35) .76, the reliability of the items in self-confident attitude (5,11,23,24,27,28,34) .74, the reliability of the items in avoidant attitude (1,2,3,4) .69, the reliability of the items in evaluative attitude (6,7,8) .64 and the reliability of the items in planned approach attitude (10,12,16,19) .59. The coefficient of Croanbach Alpha was found as .88 in the study which was conducted with totally 244 university students.

The reliability coefficient (cronbach-alpha) of the problem solving inventory which was conducted with 306 students was found as .90. The reliability results of 6 factors was like: the reliability of the items in hasty attitude subcategory (13,14,15,17,21,25,26,30,32) .75, the reliability of the items in considering attitude subcategory (18,20,31,33,35) .74, the reliability of the items in self-confident attitude (5,11,23,24,27,28,34) .72, reliability of the items in avoidant attitude (1,2,3,4) .67, the reliability of the items in evaluative attitude (6,7,8) .55 and the reliability of the items in planned approach attitude (10,12,16,19) .64. The obtained reliability coefficient scores are perceived as the reliable ones.

The Students' Scores in University Placement

The information about the students' scores in university placement was obtained via the personal information form. Math and science score for university placement was taken into consideration among the scores which they got from the exam conducted by OSYM. They 1 (absolutely agree), 2 (usually behave like that), 3 (often checked their scores in OSYM website and the statement of wrong information tried to be prevented).

Data Analysis

SPSS 15 program was used for the data analysis. Mean and standard deviation was referred in data analysis. Pearson correlation coefficient was calculated in order to determine the relationship among the variable groups because variables related to the relationship which would examine in every group had normal disturbance as the result of analysis. Significance level was indicated as 0.05 in every statistical calculation.

Table 2. Descriptive Statistics of Primary Mathematic Teacher Candidates

		According to body mass index			According to gender		Total
		Thin	Normal	Overweight	Female	Male	
	<i>N</i>	30	229	8	198	69	267
University Placement Score	\bar{x}	461.013	445.121	423.750	449.591	436.727	446.267
	<i>SD</i>	28.1113	48.3379	61.4230	43.3418	56.1519	47.2134
Problem Solving Score (PSS)	\bar{x}	84.900	87.340	96.500	86.161	90.724	87.340
	<i>SD</i>	15.0386	19.1873	13.3095	17.7218	20.8819	18.6567
Body Mass Index	\bar{x}	17.586	21.213	26.129	20.547	22.116	20.953
	<i>SD</i>	.6286	1.6305	.2322	2.0248	1.9337	2.1131
Height	\bar{x}	166.133	167.423	168.875	163.828	177.347	167.322
	<i>SD</i>	6.1908	8.3266	6.7704	5.3164	5.9206	8.0655
Weight	\bar{x}	48.600	59.720	74.625	55.193	69.604	58.917
	<i>SD</i>	3.9792	8.4451	6.0695	6.3890	7.3015	9.1547

Table 3. The results of Pearson correlation analysis of the students whose body mass indexes are between thin values

	University Placement Score		PSS	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Body Mass Index	.067	.724	.170	.370
Height	.020	.916		
Weight	.048	.803		

FINDINGS

The students' university placement scores, problem solving scores, height, weight and body mass indexes were examined in order to determine the relationship between primary math teacher candidates' university placement scores-height; university placement score-weight; university placement score-body mass index and problem solving skills total score-body mass index. Descriptive statistics related to these was like in Table 2.

When Table 2 is analyzed, the average of students' university placement scores according to body mass indexes is \bar{x} =461.013 in thin values, \bar{x} =445.121 in normal values, \bar{x} =423.750 in overweight values. The students' total problem solving skill scores according to body mass indexes are \bar{x} =84.90 in thin values; \bar{x} =87.34 in normal values; \bar{x} =96.50 in overweight values. The students' body mass indexes are \bar{x} =17.586 in thin values; \bar{x} =21.213 in normal values; \bar{x} =26.129 in overweight values when their heights are \bar{x} =166.133 in thin values; \bar{x} =167.423 in normal values; \bar{x} =168.875 in overweight values. The students' weights are \bar{x} =48.60 in thin values; \bar{x} =59.720 in normal values; \bar{x} =74.625 in overweight values.

Pearson correlation coefficient (*r*) between variable groups was calculated in order to determine every relationship because the variables belonging to the relationships which would be examined in every group have normal distribution. The obtained results are in the tables below:

When Table 3 is examined the relationship between the body mass indexes of the students in thin values and their university placement score was found as r =.067 (p >.05); [height and university placement score r =.020 (p >.05); weight and university placement score r =.048 (p >.05)] and the relationship between their body mass indexes and problem solving skills score as r =.170 (p >.05). Significant relationships between primary mathematics teacher candidates' body mass indexes and university placement scores, height and university placement scores, weight and university placement scores, body mass indexes and problem solving skills were not found as a result of the correlation analysis among the students which are in thin students according to their body mass indexes.

When Table 4 is examined the relationship between the body mass indexes of the students in normal values and their university placement score was found as r = -.019 (p >.05); [height and university placement score r =

Table 4. Pearson correlation analysis results of the students in normal values according to their body mass indexes

	University Placement Score		PSS	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Body Mass Index	-.019	.778	-.091	.169
Height	-.092	.164		
Weight	-.077	.244		

Table 5. Pearson correlation analysis results of the students in overweight values according to their body mass indexes

	University Placement Score		PSS	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Body Mass Index	-.214	.610	-.492	.216
Height	-.467	.243		
Weight	-.486	.222		

Table 6. Pearson correlation analysis results according to male students' body indexes

	University Placement Score		PSS	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Body Mass Indexes	-.247	.041*	-.060	.627
Height	.106	.385		
Weight	-.132	.281		

.092 ($p>.05$); weight and university placement score $r=-.077$ ($p>.05$) and the relationship between their body mass indexes and problem solving skills score as $r=-.091$ ($p>.05$). Significant relationships between primary mathematics teacher candidates' body mass indexes and university placement scores, height and university placement scores, weight and university placement scores, body mass indexes and problem solving skills were not found as a result of the correlation analysis among the students which are in normal students according to their body mass indexes.

When Table 5 is examined the relationship between the body mass indexes of the students in overweight values and their university placement score was found as $r=-.214$ ($p>.05$); [height and university placement score $r=-.467$ ($p>.05$); weight and university placement score $r=-.486$ ($p>.05$)] and the relationship between their body mass indexes and problem solving skills score as $r=-.492$ ($p>.05$). Significant relationships between primary mathematics teacher candidates' body mass indexes and university placement scores, height and university placement scores, weight and university placement scores, body mass indexes and problem solving skills were not found as a result of the correlation analysis among the students which are in overweight students

according to their body mass indexes.

When Table 6 is examined the relationship between male students' body mass indexes and their university placement score was found as $r=-.247$ ($p<.05$); [height and university placement score $r=.106$ ($p>.05$); weight and university placement score $r=-.132$ ($p>.05$)] and the relationship between their body mass indexes and problem solving skills score as $r=-.060$ ($p>.05$). A low-level and negative direction significant relationship between primary mathematics male teacher candidates' university placement scores and body mass indexes was found ($r=-.247$, $p<.05$). According to this situation, it can be said that the university placement score decreases when body mass index increases. When r squared ($r^2=0.061$) is taken into consideration 6% of total variance of university placement score can be noted to be caused from body mass index. The significant relationship was not found in the other correlation analysis results.

When Table 7 is examined the relationship between female students' body mass indexes and their university placement score was found as $r=.002$ ($p>.05$); [height and university placement score $r=-.089$ ($p>.05$); weight and university placement score $r=-.051$ ($p>.05$)] and the relationship between their body mass indexes and problem solving skills score as $r=-.027$ ($p>.05$).

Table 7. Pearson correlation analysis results according to female students' body indexes

	University Placement Score		PSS	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Body Mass Index	.002	.974	-.027	.706
Height	-.089	.210		
Weight	-.051	.479		

Table 8. Pearson correlation analysis results according to all students' body indexes

	University Placement Score		PSS	
	<i>r</i>	<i>p</i>	<i>R</i>	<i>p</i>
Body Mass Index	-.106	.084	.001	.986
Height	-.104	.089		
Weight	-.138	.024*		

Significant relationships between primary mathematics female teacher candidates' body mass indexes and university placement scores, height and university placement scores, weight and university placement scores, body mass indexes and problem solving skills were not found as a result of correlation analysis.

When Table 8 is examined the relationship between all students' body mass indexes and their university placement score was found as $r = -.106$ ($p > .05$); [height and university placement score $r = -.104$ ($p > .05$); weight and university placement score $r = -.138$ ($p < .05$)] and the relationship between their body mass indexes and problem solving skills score as $r = .001$ ($p > .05$). A low-level and negative direction significant relationship between primary mathematics teacher candidates' university placement scores and weight was found ($r = -.138$, $p < .05$). According to this situation, it can be said that the university placement score decreases when body mass index increases. When r squared ($r^2 = 0.019$) is taken into consideration 1% of total variance of university placement score can be noted to be caused from body mass index. The significant relationship was not found in the other correlation analysis results.

RESULTS AND DISCUSSION

That the students' university placement scores are the highest when their body mass indexes are in thin values while they get the lowest scores when their body mass indexes are in overweight values has been seen in the study which has aimed to determine the relationship between primary mathematics teacher candidates' body mass indexes and their university placement scores and their problem solving skills. While the average of thin

students' university placement scores was $\bar{x} = 461,013$ and normal students' university placement scores $\bar{x} = 445,121$, the average of overweight students' university placement scores was found as $\bar{x} = 423,750$. The difference between normal students' university placement scores and overweight students' was 21,371 [445,121- 423,750=21,371]. A score in Student Selection and Placement Exam (OSS) can change thousands of students' places in the range (URL-5). Such like results in the exam held with the aim of assessing the students' success shows that the success of students in normal body mass index [18.5-24.9] is much than the success of students in overweight body mass index [25.0-29.9]. In the same manner, Güven (2008) has found that general health patterns of the students who study at science high school was higher than the ones who study at general high school. Moreover, overweight children were indicated that they have lower performance in mathematics and reading skills and introvert, sad and anxious behaviors when compared with the children in normal body mass index (Beşikçi, 2010).

The students' problem solving skills scores have been seen to be the highest according to their body mass indexes in thin values and the lowest according to their body mass indexes in overweight values. The thin students' problem solving scores has been found as $\bar{x} = 84,90$; normal students as $\bar{x} = 87,34$ and overweight students as $\bar{x} = 96,50$. Being scores gathered from Problem Solving Inventory low means the perception of the individual's problem solving skill positive and if the score is high, the perception of the individual's problem solving skill is negative. Problem solving skills of the students whose body mass indexes are in thin values have been found higher than the ones in both normal and overweight values. This results shows that balanced

nutrition and having the desired body mass index resulting it may affect the students' mental development. Changing nutrition habits may affect the university students' mental and physical being and indirectly academic performance (Yılmaz and Özkan, 2007).

A significant relationship between the students' university placement scores and problem solving skills has been found as a result of the correlation analysis which was done among primary mathematics teacher candidates whose body mass indexes are thin, normal and overweight values. Likewise, Uskun et al. (2005) examined the effect of obesity on the academic achievement and stated that there was no difference between two groups. While there is a significant difference between the male students' body mass indexes and university entrance scores the difference was not found with their problem solving skills. According to their body mass indexes, the significant difference was not found between female students' university placement scores and problem solving skills as a result of correlation analysis. When all students are taken into consideration it was seen a significant difference between the students' placement scores and body mass indexes. Based on this result, it can be said that the placement scores decrease when their body mass indexes increase. There was not a significant relationship when other correlation analysis results were examined. Also, Berçin (2010) found a meaningful difference between the students' body mass indexes and healthy life style behaviors total score and the average of subcategory scores in her research.

SUGGESTIONS

- The informing studies about the effect of healthy life style on academic achievement should be given emphasis because the students in normal values have higher average of university placement scores than students in overweight values.
- Based on the significant difference between male students' body mass indexes and university placement scores, the effects of healthy body structure on students' success should be taken into consideration nowadays when many research studies about the factors affecting the students' success.
- All students' placement scores decrease when their body mass increase. The main reason of this situation should be examined in detail and the unity of education and health should be carried out effectively.
- The situation should be taken into consideration in terms of mental skills development because the thin students' problem solving skills have been found higher than the normal and overweight students'.
- The extensive and resemble studies which can indicate that the students having healthy body mass indexes can show their problem solving skills in

mathematics should be given importance.

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