The Study of Medical Students' Attitudes toward Exercise for Health Promotion in Phramongkutklao College of Medicine

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Background: *Phramongkutklao College of Medicine is a military medical school and also a health promotion school. As a result, encouraging these medical students to have good attitude toward exercise is considered an important mission for the college.*
Objectives: *To study the attitudes of medical students at Phramongkutklao College of Medicine about exercise for health promotion.*
Material and Method: *This survey research was carried out in 382 medical students in Academic Year 2008 using questionnaires including personal information, attitude testing and open-ended questions. Statistical analysis was conducted using descriptive analysis: percentage and mean and comparative analysis: t-test and F-test.*
Results: *The overall attitudes of medical students toward exercise were good. The attitudes of the medical cadets were better than those of the civilian medical students. The attitudes and also knowledge about exercise of the higher-year students were generally better than those of the lower-year ones. The attitudes of healthy medical students were higher than those of unhealthy ones. No significant difference in attitude was found between male and female students and between those with different Body Mass Indexes (BMI) and those with different in exercise duration and frequency.*
Conclusion: *The overall medical students' attitudes toward exercise for health promotion in Phramongkutklao College of Medicine were good. The influencial factors were found to be status of medical students, stage of medical study and health status.*

Keywords: *Exercise for health promotion, Attitude, Medical Cadets*

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At present, non-infectious chronic diseases such as diabetes, hypertension, hyperlipemia, coronary heart disease, osteoarthritis, and obesity are considered to be the main health problems of Thai people. These diseases may cause follow-up complications, for example, hypertension is one of the risk factors leading to coronary heart disease and stroke, major cause of death in Thailand. Also, these chronic diseases can lead to physical impairments and difficulties to engage in daily life activities, which may influence the quality of life of both patients and their family. An interesting point is that these diseases such as hyperlipemia, diabetes, hypertension, and coronary heart disease are avoidable by exercise. Obviously, doctors play an important role in promoting exercise to the public by encouraging people to realize the necessity of exercise and serving as good role models.

There are few research papers about medical/university students and exercise. Pongmitr Poklang[1] presented "The Study on Attitude Toward Exercise of Suranaree University of Technology Students" which found that the students had good attitudes toward exercise, no difference in attitudes between male and female students, the attitude between the freshmen and sophomore, and between the sophomore and the senior are found different significantly. Studying in Khon Kaen university showed that among 332 out of 341 medical students (97.4%) who responded to the questionnaire, the prevalence of sufficient physical activity was 26.8% and the significantly associated

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factors were having an enjoyable sports and a spare time[2]. The study of Prom-in et al found a statistically significant difference in attitudes toward exercise between Islamic male university students and Islamic female university students[3].

Phramongkutklao College of Medicine tries to enhance attitudes and skills regarding health promotion among medical students by offering extracurricular activities, for instance, the second and the third year medical students exercise as a regular task, and third year students are required to take selective courses (tennis and swimming) for two weeks. Moreover, the fourth to sixth year medical students, who engage in clinical rotations, are allowed to exercise voluntarily, but every student needs to test their physical fitness twice a year. Apart from that, a sport club promotes physical and mental health operated by medical students with the support of the administrative board of Phramongkutklao College of Medicine. Additionally, the Department of Rehabilitation Medicine set up the objective of the curriculum for medical students so as to have good attitudes toward exercise and be able to apply this knowledge to promote physical health. In Academic Year 2006, the department offered the course "Exercise for Health" and started physical fitness tests in the last group of fourth-year medical students who studied in the Department of Rehabilitation Medicine. All 14 medical students participated in this test, the results showed most of them had fair to very poor physical health.

According to these information, the researchers were interested in discovering the attitudes toward exercise for health promotion by studying the relationships between individual factors (sex, status, stage of medical study, body mass index (BMI), health status, and length and frequency of exercise), and perspectives on exercise including investigating the influential factors on medical cadets' decisions whether or not to exercise.

Material and Method

For this survey research, the subjects comprised 382 medical students from Phramongkutklao College of Medicine ranging from the second year to the sixth year in Academic Year 2008. The study was conducted from September 2008 to February 2009 using questionnaires. The three parts included in this questionnaire were first; personal information (sex, medical field, stage of medical study, BMI: Body Mass Index, health status, and length and frequency of exercise per week). Second; attitude test about exercise for health promotion, composed of three parts, including cognitive, affective, and behavioral components, used a Likert rating scale to divide attitude level (excellent, good, fair, poor and very poor) and graded on a point scale from 1, very poor to 5, excellent, and third, open-ended questions on suggestions and reasons to exercise. The reliability test conducted using SPSS Program (Statistical Package for Social Sciences, Personal Computer Plus) showed a statistical value at 0.9526. The analysis by comparing each aspect of the attitude section was categorized by personal information. The t-test was used to compare the differences between two sampling groups and the F-test was used in case of any difference among the three sample groups or more. The opinions about suggestions and reasons to exercise were analyzed using descriptive method.

Results

Of the 382 enrolled participants who returned the questionnaires (response rate = 96.95%), there were 229 males (59.95%) and 153 females (40.05%). Both medical cadets and civilian medical students participated in this study with a response rate of 57.74% and 42.26%, respectively. The number of participants from the second to the fourth year students was very similar, followed by the number of the fifth year medical students. The smallest group of participants was the sixth year students. Concerning BMI, 60.69% of participants found normal while 14.78% were overweight and 2.90% were obesity. Most of medical students (79.53%) were healthy, whereas 13.65% had slight health problems and 5.77% had underlying diseases. Regarding exercise behaviors, 36.65% of medical students exercised more than twice a week and 21.47% exercised twice a week. Moreover, for the length of exercise, 45.03% spent 20 to 30 minutes, 29.58% spent less than 20 minutes and 25.39% spent more than 30 minutes to exercise, as shown in Table 1.

The overall attitudes of medical students on exercise were at a positive level with a mean of 3.74. Considering the components of exercise, affective and cognitive, the study found that the means were at high levels, 3.89 and 3.81, respectively, while the behavioral component mean was at an average level, 3.17 (Table 2).

A comparison of attitudes between personal factors and attitude toward exercise revealed no significant differences between male (mean = 3.71, SD = 0.44) and female (mean=3.77, SD = 0.47) medical students (p-value = 0.180). The opinions about

maintaining health among medical cadets showed a statistically significance higher than civilian medical students at a level of 0.001. As shown in Table 3 and Fig. 1, the fourth, fifth, and sixth year medical students had better attitudes toward exercise than second year medical students while the fifth and the sixth year medical students also had better attitudes than the third year students. Also, the fifth year medical students had more positive opinions about exercise than the fourth year students with a statistical significance level of 0.05. Table 3 demonstrates no significant difference in exercise attitude of medical students who had difference in BMI and also duration and frequency of exercise. The attitudes of medical students who were healthy presented statistically significance higher than those who had some underlying diseases at a level of 0.05.

Table 1. General and health information and exercise behavior of medical students

General Information	n	%
Gender		
Male	229	59.95
Female	153	40.05
Status		
Medical cadets	220	57.74
Civilian medical students	161	42.26
Stage of Medical Study (year)		
2	99	25.92
3	110	28.79
4	91	23.82
5	55	14.40
6	27	7.07
Body Mass Index (BMI)		
< 20.00 kg/m^2	82	21.63
20.00-24.99 kg/m^2	230	60.69
25.00-29.99 kg/m^2	56	14.78
30.00-39.99 kg/m^2	10	2.64
> 40.00 kg/m^2	1	0.26
Health Status		
normal health	303	79.53
slight health problems	52	13.65
early stage of disease	4	1.05
some underlying diseases	22	5.77
Frequency of Exercise		
< once/week	80	20.94
once/week	80	20.94
twice/week	82	21.47
> twice/week	140	36.65
Length of Exercise (minutes)		
< 10 min	37	9.68
< 20 min	76	19.90
20-30 min	172	45.03
> 30 min	35	9.16
> 40 min	62	16.23

A comparison of cognitive components among medical students found that the third to sixth year medical students had a higher mean than the second year students ($p < 0.05$) whereas the fourth to sixth year medical students had a higher mean than the third year students ($p < 0.05$). Also, the fifth year medical students had a higher mean than the fourth year students ($p < 0.05$) as illustrated in Table 4 and Fig. 2.

The results from the open-end questions revealed that reasons to exercise were to be healthy, to lose weight, to relax and relieve stress, and to socialize with new friends. The reasons for not exercise were lack of time, exhausted from studying, uncomfortable facility, weather condition and laziness. They also suggested that faculty should offer various choices of exercise that suit individual needs, should not force or punish one who does not like to exercise, should provide lessons about advantages and methods of exercise, should organize exercise that will not interrupt classroom lessons and should provide time for exercise.

Discussion

The study of medical students' attitudes toward exercise in Phramongkutklao College of Medicine illustrated that the overall attitudes were at a good level especially cognitive and affective components whereas the behavioral component was

Table 2. Mean and SD of attitude components toward exercise of medical students

Attitude components toward Exercise	Mean	SD	Outcome
Cognitive component	3.81	0.51	Good
Affective component	3.89	0.53	Good
Behavioral component	3.17	0.73	Fair
Total	3.74	0.45	Good

Table 3. Attitudes toward exercise by personal factors

Personal factors	n	Mean	SD	F	p-value
Stage of Medical Study (year)					
2	99	3.57	0.38	10.672	<0.001
3	110	3.67	0.43		
4	91	3.78	0.44		
5	55	4.01	0.49		
6	27	3.88	0.46		
BMI: Body Mass Index					
< 200 kg/m^2	82	3.73	0.54	1.138	0.333
20.00-24.99 kg/m^2	230	3.76	0.41		
25.00-29.99 kg/m^2	56	3.65	0.47		
> 30 kg/m^2	11	3.63	0.41		
Health Status					
normal health	303	3.75	0.44	2.891	0.035
slight health problems	52	3.75	0.47		
early stage of disease	4	3.84	0.64		
some underlying diseases	22	3.47	0.46		
Exercise Length (minute)					
< 10 min	37	3.65	0.52	0.728	0.573
< 20 min	76	3.70	0.42		
20-30 min	172	3.75	0.47		
> 30 min	35	3.72	0.41		
> 40 min	62	3.79	0.42		
Exercise Frequency					
< once/week	80	3.74	0.48	0.168	0.918
once/week	80	3.73	0.45		
twice/week	82	3.77	0.41		
> twice/week	140	3.72	0.46		

* Statistical significance at level of 0.05

Table 4. Cognitive component toward exercise by year of study

Stage of Medical Study (year)	n	Mean	SD	F	p-value
2	99	3.55	0.41	21.945	<0.001
3	110	3.73	0.47		
4	91	3.89	0.45		
5	55	4.22	0.55		
6	27	4.03	0.47		

* Statistical significance at level of 0.05

at a fair level. When analyzing the factors for not exercise, it was found that the influential factors were time and tough lessons. The result was consistent with the study of frequency and factors involved with sufficiency exercise of medical students in Khon Kaen University in 2006 by Narin et al[2] who found a statistically significant difference ($p < 0.05$) in a group of medical students who had enough time to exercise and would exercise sufficiently double that of those who lacked time.

No significant difference was found in the attitudes toward exercise between male and female medical students because all the students knew in advance that they had to pass the physical fitness test

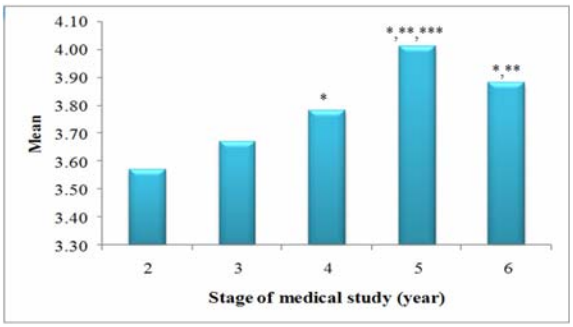

Fig. 1 Attitudes toward exercise by stage of medical study (year). Demonstrate average attitude-scores of the students by year of study using multiple comparison test(LSD); *, **, *** represent statistically significant difference at 0.05 when compare with 2nd, 3rd and 4th year respectively.

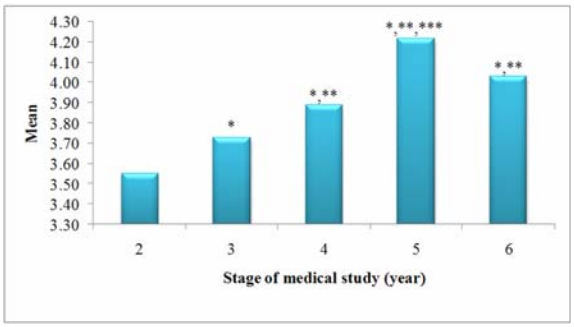

Fig. 2 Cognitive component regarding exercise by stage of medical study (year). Demonstrate average cognitive scores of the students by year of study using multiple comparison test (LSD); *, **, *** represent statistically significant difference at 0.05 when compare with 2nd,3rd and 4th year respectively.

before beginning study in the college. During the second year, all medical students live in the same environment (daily routine, medical lessons, and extra activities) which was consistent with the study of Pongmitr Poklang[1] on the attitudes toward exercise of students in Suranaree University of Technology. In contrast, the study of Prom-in et al[3] found a statistically significant difference at 0.05 in attitudes toward exercise between Islamic male university students and Islamic female university students.

The study showed that the attitude mean of medical cadets was significantly higher than civilian medical students. This might be caused by the assumption that medical cadets should be person who is interested in exercise.

In terms of year of study, the fourth to sixth year medical students had better attitudes toward exercise than the second year medical students while the fifth and sixth year medical students also had better attitudes than the third year students. Also, the fifth year medical students had more positive attitude about exercising than the fourth year students at a statistically significant level of 0.05 whereas no obvious difference was found between the fifth and sixth year students. Regarding the cognitive component which in this study the researchers were interested in, the third to sixth year medical students had more positive attitudes than the second year students whereas the fourth to sixth year medical students had better attitudes than the third year students. Additionally, the fifth year medical students had more positive attitudes than the fourth year students, but no clear difference was found between the sixth and the fifth year students. According to the results, it can be concluded that education, activity, and the environment at Phramongkutklao College of Medicine may influence the improvement of attitude towards exercise. No clear difference was found regarding the attitudes between the sixth and the fifth year medical students because only 27 sixth year students participated in this study.

In terms of health status, medical students who had normal health had a higher mean attitude than those who had underlying diseases. Due to lack of health background information, the study could not determine whether or not exercise had an effect on them, which may influence their attitudes toward exercise. The reason why people who had underlying disease reported for not exercising was their beliefs and familiarity with exercise in childhood even that exercise could cure diseases.

It is possibly that medical students had difficulty managing their time to exercise; therefore no influential on attitude had been found in students who had difference in length and frequency of exercise.

Conclusion

Phramongkutklao College of Medicine is a medical cadet school which realizes the importance of physical fitness. As a consequence, the College provides exercise activity and a physical test including sport events for students. However, medical students who encounter tough lessons may want to relax more than taking exercise when they have free time especially with the inconvenient sport facilities. As a result, suitable space and sport equipments should be provided to students, located near the dorm or in the

operation building. The college should provide an opportunity for students to exercise together in a short time during the day or after class with a variety of exercises such as strengthening, stretching, and endurance exercise, which many companies and factories are already providing their workers. Moreover, the college should provide courses giving basic knowledge of exercise to students in their early years of study so students will gain knowledge about the advantages and the proper way to exercise. When students appreciate the value of exercise, they will exercise willingly with positive attitudes. Furthermore, the knowledge of exercise should be disseminated to all medical staff including professors and supervisors and the College together with Hospital should create a positive atmosphere to promote exercise for health.

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การศึกษาเจตคติต่อการออกกำลังกายเพื่อสร้างเสริมสุขภาพของนักศึกษาแพทย์วิทยาลัยแพทยศาสตร์พระมงกุฎเกล้า

รังสิมา อิงอร่าม, อรัญญา ทรัพย์พ่วง, วรรัชนี อิ่มใจจิตต์

วิทยาลัยแพทยศาสตร์พระมงกุฎเกล้า เป็นทั้งโรงเรียนแพทย์ทหาร และโรงเรียนแพทย์สร้างเสริมสุขภาพ การสร้างเจตคติที่ดีต่อการออกกำลังกายจึงเป็นสิ่งสำคัญมาก ผู้วิจัยจึงได้ทำการศึกษาเจตคติต่อการออกกำลังกายเพื่อสร้างเสริมสุขภาพของนักศึกษาแพทย์ โดยทำการศึกษาในนักศึกษาแพทย์ปีการศึกษา 2551 จำนวน 382 นาย โดยใช้แบบสอบถามที่ผู้วิจัยสร้างขึ้น

ผลการศึกษาพบว่านักศึกษาแพทย์โดยรวมมีเจตคติที่ดีต่อการออกกำลังกายเพื่อสร้างเสริมสุขภาพ เจตคติของนักเรียนแพทย์ทหารมีคะแนนเฉลี่ยสูงกว่านักศึกษาแพทย์พลเรือน เจตคติของนักศึกษาชั้นปีที่สูงกว่าดีกว่าชั้นปีที่ต่ำกว่า นักศึกษาแพทย์ที่มีสุขภาพดีมีคะแนนเฉลี่ยเจตคติสูงกว่านักศึกษาที่สุขภาพไม่ดี ปัจจัยเรื่องเพศ ค่าดัชนีมวลกาย ระยะเวลา และความถี่ในการออกกำลังกายไม่มีผลต่อเจตคติ

โดยสรุปนักเรียนแพทย์ทหารและนักศึกษาแพทย์ วิทยาลัยแพทยศาสตร์พระมงกุฎเกล้ามีเจตคติที่ดีต่อการออกกำลังกายเพื่อสร้างเสริมสุขภาพ ปัจจัยที่มีอิทธิพลต่อเจตคติของนักศึกษา ได้แก่ สถานภาพของการศึกษา (นักศึกษาแพทย์สังกัดพลเรือนและนักเรียนแพทย์ทหาร) ชั้นปีที่ศึกษา และสภาวะสุขภาพ