The Effects of a Peer-Assisted Progress Test Preparation Program on The Results of Saudi Medical Students at Maastricht University

Fawaz Fahad Almuwayshir[1†*] and Mohammed Ahmedhani Kilani[1†], Amro Mohammed Ghazi[1], Yaser Ibrahim Alomar[1], Ahmed Amin Alsadah[1], Riyadh Mohammed Alshammari[1], Yazeed Ibrahim Alomar[2]

(The first two authors contributed equally to this work and both qualify as the first author)

1. Medical Doctor (MD), Faculty of Health, Medicine and Life Sciences (FHML), Maastricht University, Maastricht, The Netherlands.
2. Intern, College of Medicine, Qassim University, Qassim, Saudi Arabia.

† The first two authors contributed equally to this work and both share first authorship of this article.

* Correspondence author
- Email: F.Almuwayshir@alumni.maastrichtuniversity.nl

Abstract—

Introduction: A peer-assisted program was made to prepare Saudi medical students at Maastricht University for the progress test, which is a test that measures the students' progress in overall medical knowledge and is performed 4 times a year by all medical students at Maastricht University. **Methods:** A peer assisted progress test preparation program was organized for nine days. Each day, a tutorial was set up in which two medical topics covered in the progress test was discussed. The PT exam results of students who attended the tutorials were compared with a control group. **Results:** 21 students out of the 25 participants, provided their results to be analyzed. The mean of the results of the participants in the test on May 2013 was 15.6%, then after the program, the mean result of the test on September 2013 increased to 20%. The P-value was 0.000. The raise of the results was significant when compared to a control group. **Conclusion:** A peer-assisted progress test program was very effective in preparing the students for the progress test.

Index Terms—
Education, Medical/methods
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INTRODUCTION:

Maastricht University was a pioneer in implementing progress testing to medical students. Maastricht medical school developed this test back in the 1970s as a standardized testing method for medical students (1). Later on, and as a part of the Dutch medical school collaboration, five out of eight medical schools in the Netherlands implemented this test (1, 2). Other international medical schools - including in Saudi Arabia, Germany and Indonesia- adopted the idea of a progress test as a comprehensive test adapted to the learning objectives of each curriculum (3-5).

The progress test is performed 4 times every year, starting from year 1 till year 6, in which students

have to show progress (2, 6). The result of the progress test is based on a norm, in which each progress test is different and calculated based on the aggregated results of the specific test. The average per year minus the standard deviation is fitted into fifteen points of the quadratic curve and a pass grade is determined per measurement moment (7). This results in a test that could guide as a comparative model between students, medical schools and different medical programs (4, 8).

Expectedly, -and due to the fact that the progress test is a norm-based result- there are a lot of students who find difficulties with passing this exam, especially in the international track of medicine (ITM).

Moreover, the progress test consists of 17 sections covering different medical fields (4), including:

- Respiratory system
- Blood & lymphatic system
- Musculoskeletal system
- Mental health care
- Reproductive system
- Cardiovascular system
- Hormones and metabolism
- Skin and connective tissue
- Personal and social aspects
- Digestive system
- Kidney and urinary system
- Nervous system
- Molecular and cellular aspects
- Methodology
- Life stages
- Knowledge of skills
- Preventive health care

Due to the diversity in the topics, it is considerably difficult for student to prepare for such an exam. In fact, medical students are not expected to give this test extra preparations (2). Instead, they should expand their knowledge through their normal studies, and theoretically speaking by doing so they will be able to pass the test (9). However, what about students who do not pass this exam? Can't they find any way to prepare for this test in a short period of time, e.g., 2 weeks?

As peer assisted learning was proven to be effective in for medical skills (10). We investigated if the benefit will hold with clinical knowledge. In this paper, we summarize our experience with a peer-assisted learning program that was designed to cover most relevant progress test subjects.

After finishing the program, the participants were asked to send their results to be used for analyzing and comparing their results to their previous results to see whether there was a significant increase in the results after attending the program. This was then compared with a control group that did not attend the program made based on peer assisted learning groups.

METHODS:

THE PEER-ASSISTED PROGRESS TEST PREPARATORY PROGRAM:

The program was carried out at Maastricht University in August of 2013 for a duration of nine days. The program was in Arabic and thus only

Saudi students were asked to participate in the program.

The program was composed of one lecture and eight tutorials. The lecture was titled "How to prepare for the Progress Test" and was given on the first day. One tutorial, which lasted for three hours, was given on each of the remaining eight days. The number of students who participated in the tutorials was thirty-five students. However, the number of those who were present in more than three tutorials was twenty-five students. The participants were second, third, fourth, and fifth year medical students from Maastricht University with the majority being third year students.

All medical topics covered in the tutorials were categorized into seventeen sections, of which two sections were discussed in each tutorial. A maximum of ten medical topics were discussed in each tutorial. Those topics were chosen based on the diseases that appeared most in the questions of the last eight progress tests.

A few sections (three out of the seventeen) were not discussed in the tutorials. The first section, which was Skin and Connective Tissue, was not covered in detail in the medical curriculum of Maastricht University. Therefore, it was decided not to include it in the tutorials due to the students' lack of comprehensive knowledge of this topic and introducing it in the tutorials would have consumed a great deal of time. The second was Life Stages, which was deemed difficult to cover in the tutorials, as it is a very broadly wide-ranging category. The third is Knowledge of Skills, a category that was excluded because most of the students participating in the program lacked the background knowledge on the skills needed in the field. Only subjects that most of students were familiar with were included.

At the end of the lecture given on the first day, the topics to be discussed at the first tutorial were assigned to a number of participants. Likewise, at the end of each tutorial each participant was assigned a topic to present in the upcoming tutorial. In addition to presenting the topic, the participants were asked to discuss a number of previous progress test questions related to the topic.

Data Collection:

After completing the program, the participants were asked to indicate the result of two progress tests on a prepared questionnaire. The first is the result of the last test taken before the program (May 2013) and the second is the result of the first test taken after the program (September 2013). However, in the case of participants who did not attend the test in May 2013, the result provided was for the test previous to it, which took place in February 2013.

Out of twenty five students who participated in more than three tutorials, only the results of twenty one students were collected. A minimum of 50% attendance was required for a participant's results to be included in the study.

The results were then compared to each other. Then, the change in each participant's result was compared with the changes in a control group's results, which consisted of comparable Saudi medical students at Maastricht University who did not participate in the preparatory program.

The participants in the control group were chosen randomly by being invited to fill in a questionnaire via the Saudi Student Association Maastricht Facebook Page as well as via Email. Only twelve

students agreed to participate in the study and give their results.

Statistical Analysis:

SPSS software was used to analyze the data and a paired T-test was applied. The mean result of the experimental group was measured for the most recent test (September 2013) and compared to the mean result of the last test (May 2013). Then, the same software was used to analyze the results of the control group in the same way. After that, the results of both groups were compared to each other

RESULTS:

The mean result of the students attended in more than 3 tutorials was 15.6% in the test conducted in May 2013. After enrolling in the program, the mean of the results has increased dramatically to 20% in the test of September 2013, with an increase of 4.5% in mean (Table 2). As illustrated in (Table 2), 95% of the results of the students attending the program have increased by 2.6-6.4%. The P-value of the increase in the mean result is 0.000, which is a statistically significant result.

On the other hand, when comparing the results in the control group, the mean of the results was 18,9 in May 2013 test and decreased to 18% in September 2013 test. Consequently, the mean decrease in the results was almost 1% with a P-value of 0,59 (Table 3 & 4). This decrease is not statistically significant.

Table 1: The difference in the mean result of the students participating in the program (experimental group).
Paired Samples Statistics

	Mean	Number of participate	Std. Deviation	Std. Error Mean
May 2013	15,6	21	5,24	1,14
Sept 2013	20	21	5,24	1,14

Table 2: The difference in the mean result of the students participating in the program (experimental group).
Paired Samples Test

	Paired Differences					
				95% Confidence Interval of the Difference		
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	P value
Difference in the mean results	4,5	4,1	,89	6,39	2,64	,000

Table 3: The difference in the mean result of the students not participating in the program (control group).
Paired Samples Statistics

	Mean	Number of participate	Std. Deviation	Std. Error Mean
May 2013	18,9	12	9,64	2,78
Sep2013	18	12	10,50	3,03

Table 4: The difference in the mean result of the students not participating in the program (control group).

Paired Samples Test

	Paired Differences					
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		P value
				Lower	Upper	
Difference in the mean results	,91	5,7	1,6	-2,7	4,5	,589

Table 5: The results of the students participating in our research (experimental & control groups), in May & September 2013.

Experimental Group		Control Group	
Results in May 2013 (Before the program)	Results in Sep 2013 (after attending > 3 tutorials)	Results in May 2013	Results in Sep 2013
12,00	21,00	29,00	22,00
7,00	16,00	11,00	12,00
12,00	17,00	18,00	23,00
18,00	23,00	27,00	23,00
23,00	28,00	34,00	30,00
18,00	19,00	14,00	23,00
23,00	30,00	15,00	6,00
16,00	19,00	8,00	9,00
16,00	23,00	10,00	3,00
21,00	29,00	18,00	14,00
12,00	24,00	9,00	12,00
13,00	9,00	34,00	39,00
17,00	18,00		
21,00	24,00		
12,00	19,00		
26,00	21,00		
6,00	14,00		
11,00	13,00		
17,00	21,00		
12,00	16,00		
16,00	20,00		

DISCUSSION:

According to the results of the experimental group, there was an increase in the results of 19 out of 21 students (Table 3). As the information were assembled anonymously, it was not possible to track the 2 students who scored lower after joining the program. Possible explanations why the 2 students scored lower are overthinking about the questions during the exam, more knowledge make them think of a specific answer so they avoid answering after all, or the students favored not to change their initial answer when in doubt (11).

As this study focuses on the program that was made for Saudi students, we needed to exclude other factors that might have contributed to improve the results, such as easier exam at the experimented test moment, or the fact that it has taken place in September after the summer vacation when usually

the results of progress tests drops (12). In order to confirm that these cofounders did not affect the results of the students in the experimental group, we made a comparison with a control group who were exposed to the same cofounders. Looking at the results of control group (Table 4), there was a slight decrease in the mean results (mean=0,9%), which is not statistically significant. Meaning that the students in the control group did not improve nor get worse, and the change in the mean results of control group was due to chance (13). Since the mean of experimental group increased by 4.5% (p=000), and the mean of the control group decreased by 0,9% (P=.54), the mentioned external factors could not explain the change in the experimental group.

CONCLUSION:

This small study highlights the effectiveness of peer-lead educational activities in preparation for the progress test. The peer-assisted progress test preparatory program was a major cause of increasing the results of the students participating in more than 3 sessions of the program. Therefore, the peer-assisted progress test preparation program can be applied to prepare students for the progress test, and it is likely to increase the score for most students participating in more than 3 sessions of such a program.

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