

# The impact of weekly test on the academic performance of first year medical students

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## Abstract

**Background:** Modifications are continually made within medical school curriculum to improve effectiveness of their educational programs. For the students of 2016–2017 academic year, the anatomy department of Al-Azhar medical college implemented an assessment strategy change to include both formative and summative assessments in its preclinical curriculum. Formative assessments included weekly test. This strategy required students to keep up with content weekly. The small group component provided opportunities for peer discussion and immediate review of concepts. A comprehensive module exam was added to encourage students to retain concepts in active memory throughout the module. The purpose of this study was to determine the impact of an assessment program that included weekly test and a comprehensive module exam. Since frequent testing has been shown to increase long term retention, we hypothesized that inclusion of weekly test would result in stronger performance on comprehensive module exams. **Method:** During a first-year course, students were offered weekly test that includes portions covered in that particular week that could assess their knowledge in abdominal anatomy. Once a week they had a test on that given portions. Students immediately received feedback afterwards. 150 students participated in the final summative exam and the marks entered (Internal assessment -2).Limb questions were used as a control i.e only summative exam is conducted without weekly test and marks were entered (internal assessment -1) . The results were compared. **Results:** By comparing the results (mean and standard deviation) of first and second internal assessment marks there is significant ( $p < .001$ ) improvement in the performance of the students. **Conclusion:** Formative assessment thus recognized as one of the most powerful methods to improve learning and teaching. Large effort from faculty and time involved in planning, developing and administering formative assessments will certainly contribute for better results.

**Key Word:** weekly test, internal assessment, undergraduate medical education

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## INTRODUCTION

Anatomy has always been one of the toughest subjects among the basic sciences of medical school. Anatomical knowledge is traditionally tested by means of summative

examination, providing information for pass/fail decisions. Learning is often considered complete when a student can produce the correct answer to a question. The direct effect of testing is based on research showing that when students are tested on material, they remember that material much better than when they are not tested on the material. This is called the testing effect<sup>1</sup>. The indirect effects of testing refer to the increase in the amount of study time and improvement in study strategies that result from frequent testing. Students tend to study material most thoroughly shortly before a test. If students are given only a midterm test and a final examination (as often happens in large university courses), they will probably have only two periods of intense study during the semester. By contrast, if students are tested frequently during a course (say, weekly), they will potentially be

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more likely to keep up with readings and space out their periods of study. Much research shows that spaced study sessions aid memory performance<sup>2,3</sup> It has been suggested that the incorporation of formative assessment into the process will encourage adoption of an active learning approach and therefore may help achieve deeper learning<sup>4</sup>. In addition, it has been recognised that retention of gained knowledge is improved when educational encounters are spaced and repeated over a defined period and students are encouraged to apply ongoing learning and not a cramming technique just before the final examinations<sup>5,6</sup>. Greater use of formative assessment throughout the module or course therefore provides an ideal opportunity for encouraging a spaced approach to learning. The aim of the present study was to further investigate the optimal frequency for retrieval practice through formative assessments in educational practice. A spaced-education format encourages a building block approach to learning that is continuous in nature rather than focussed on an intense period of study prior to summative examinations.

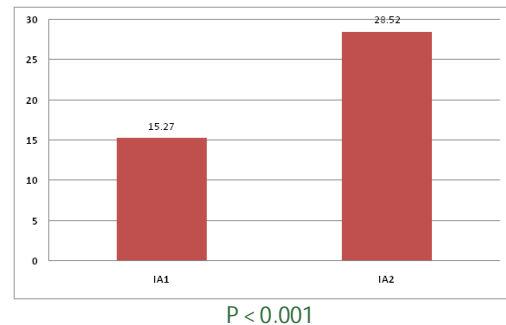
## MATERIALS AND METHODS

**Educational setting:** Al-Azhar medical college and superspeciality centre, at Idukki, offers a six-year medical educational programme. In a first-year course, the students are introduced to the gross anatomy of the limbs, thorax, abdomen, and pelvis, head and neck and neuroanatomy. Instructional methods used are lectures, self-study assignments, interactive lectures, seminars, collaborative learning, laboratory sessions with dissection. The students are assessed in a summative exam at the end of the first four months covering half of the portions in the above mentioned topics. In next four months the remaining portions are covered and they are assessed. so students has to face totally two summative exams in their first year

## METHODOLOGY

The present study was conducted in the academic year 2017-2018 by the department of anatomy. The study consists of two phases. In the first phase(first four months) students were exposed to routine teaching methods and they are assessed at the end of first summative assessment. The portions mainly includes limbs and their marks are entered as internal assessment-1. In the second phase(next four months) in addition to routine teaching methods, students were exposed to weekly test (includes important topics covered in that particular week) and feedback is given within one or two days. Finally, they are assessed at the end of second internal assessment. All data were analyzed in SPSS 18.0. The results were analyzed and compared using paired ‘t’ test.

## RESULTS



**Table 1:** Comparison of first and second internal assessment marks By comparing the results (mean and standard deviation) of first and second internal assessment marks there is significant ( $p < .001$ ) improvement in the performance of the students.

## DISCUSSION

From the above results it was clear that the weekly test imparted a significant increase in the performance of the students. It also possess some other advantages R. Abrecht<sup>7</sup> considers the advantage of formative assessment as follows a)The characteristic features of the student will be addressed b)it involves the student in the learning process, by indelibly informing him on the steps that he takes c)it is part of the educational process, by making “success” easier, without intersperse it d)seeks arrangement with a particular educational situation, therefore it must involve a form of flexibility, be open to pluralism and diversity e)it is more related with the educational process than with its results f)it is not secured to the observation of the educational process, but it helps it through permanent adaptation and adjustment. g)it identifies the complications and places them on intricacy levels, by trying to identify the causes and exceed them, not sanction them as summative evaluation does Deniz<sup>8</sup> found that there is a positive relationship between students’ attitudes towards modern learning technologies and their academic achievement. Academic achievement increases with the use of modern technologies positively. There is a strong association between individuals attitudes towards education and their academic performance and commitment. The weekly test aims at the advancement of the student, the identifies his difficult moments, their reason and the way to surpass them. This evaluation is not translated in grades and so much the less in scores; it is a matter of information, a feedback for both the student and the teacher Harlen and James<sup>9</sup>, characteristics feature of formative assessment are:

- is crucial positive in intent, in that it is directed towards encourage learning; it is therefore part of teaching;

- it takes into account the advance of each individual, the attempt put in and other aspects of learning which may be unstated in the curriculum; in other words, it is not purely standard-referenced;
- it has to take into account several occasion in which certain skills and ideas are used and there will be inconsistencies as well as patterns in behaviour; such unpredictability would be 'error' in summative evaluation, but in formative evaluation they provide diagnostic information;
- reasonableness and usefulness are uppermost in formative assessment and should take precedence over concerns for reliability;
- even more than assessment for other purposes, formative assessment requires that pupils have a central part in it; pupils have to be active in their own learning and unless they come to understand their power and fragility, and how they might deal with them, they will not make progress

Feedback is the central function of these method of assessments. It typically involves a focus on the detailed content of what is being learnt<sup>10</sup> rather than simply a test score or other measurement of how far a student is falling short of the expected standard.

Nicol and Macfarlane-Dick<sup>11</sup>, list seven principles of good feedback practice:

1. It elucidate what good performance is (goals, criteria, expected standards);
2. ease the development of self-assessment in learning;
3. supply high quality knowledge to students about their learning;
4. motivates teacher and peer dialogue around learning;
5. encourages positive motivational beliefs and confidence
6. It provides opportunities to close the gap between current and required performance;
7. It provides information to teachers that can be used to help format teaching.

High standard questions are important for medical student assessments. This is even more crucial for summative assessments where medical student performance influences their development within the program<sup>12</sup> and results in a final grade for a course. Problem-solving questions can be used to assess application of knowledge (procedural knowledge) rather than simple factual recall (declarative knowledge). Such questions can be used to test basic as well as clinical sciences<sup>13</sup>.

## CONCLUSION

Greater retention of capacity occurs when learning trials are spaced rather than amass, and weekly formative assessments are likely to promote intense studying throughout the period of the course rather than just before the final exam. Formative assessment thus recognized as one of the most powerful methods to improve learning and teaching. Large effort from faculty and time involved in planning, developing and administering formative assessments will certainly contribute for better results.

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