

Use of didactic movies as resource to teach-learning of the myofascial massage technique

O uso de filme didático como recurso no ensino-aprendizagem da técnica de massagem miofascial

El cine como recurso didáctico en la enseñanza-aprendizaje de la técnica de masaje miofascial

Luiz Francisco Cachoni¹, Isabela Pessa Anequini¹, Mariana Callil Voos¹, Francis Meire Favero²,
Thiago Saikali Farcic³, Fátima Aparecida Caromano¹

ABSTRACT | The effect of demonstrations and instructions using a movie as complement in the teaching-learning process of technical skills of myofascial massage was evaluated (MM). This is an experimental, double-blind study, with the participation of a physical therapist professor and 60 physical therapists who took the MM course (blind to the objective of the study). The course lasted for 15 classes, using the *Massoterapia Clínica* book and lectures for group A (n=30). The same material and a didactic movie were proposed for group B (n=30). The book describes and illustrates the maneuvers and the movie demonstrates them in a practical way. At the end of the course, a treatment simulation was filmed and evaluated, then repeated after two months to verify retention. Participants answered a questionnaire on their satisfaction with the course. The footage was assessed by two physical therapists. The aspects evaluated were: pressure, patient positioning, physical therapist positioning, number of maneuvers per muscle, location, direction of the maneuvers, number of repetitions of the maneuvers and the hand segment used. Each item was scored as 1: Totally inadequate technique; 2: Technique with great failure; 3: Technique with small failure; 4: Satisfactory technique; and 5: Completely adequate technique. Results: Intraclass correlation analysis confirmed data reliability and showed differences between groups in the ability of applying MM, with better learning and retention by group B (p<0.05). In addition, the use of a movie reduced the duration of classes by one-third. It was concluded that the movie instructions completed traditional resources with advantages for learning and retention.

Keywords | Physical Therapy Modalities; Massage; Learning; Teaching Materials; Education.

RESUMO | Avaliou-se o efeito de demonstrações e instruções usando filme como complemento no processo de ensino-aprendizagem de habilidades técnicas de massagem miofascial (MM). Trata-se de um estudo experimental, duplo-cego com a participação de uma fisioterapeuta professora e 60 fisioterapeutas que realizaram o curso de MM (cegos ao objetivo do estudo). O curso teve duração de 15 aulas, utilizando o livro *Massoterapia clínica* e aulas expositivas para o grupo A (n=30). O mesmo material e um filme didático foram propostos para o grupo B (n=30). O livro descreve e ilustra as manobras e o filme as demonstra de modo prático. Ao final do curso foi realizada avaliação por filmagem de simulação de tratamento, e repetida após dois meses para verificar a retenção. Os participantes responderam a um questionário sobre satisfação com o curso. As filmagens foram avaliadas por dois fisioterapeutas. Foram avaliados: pressão realizada, posicionamento do paciente, posicionamento do fisioterapeuta, número de manobras por músculo, localização, direção e sentido das manobras, número de repetições das manobras, segmento da mão utilizado. Cada item foi pontuado como: 1=Técnica totalmente inadequada, 2=Técnica com grande falha, 3=Técnica com pequena falha, 4=Técnica satisfatória, 5=Técnica completamente adequada. A análise de correlação intraclasses confirmou confiabilidade dos dados e mostrou diferenças entre grupos na habilidade de aplicação de MM, com melhor aprendizado e retenção pelo grupo B (p<0,05). Além disso, a utilização de filme diminuiu a duração das aulas em um terço. Concluiu-se que as instruções em filme complementaram recursos tradicionais com vantagens para o aprendizado e retenção.

Descritores | Fisioterapia; Massagem; Aprendizagem; Materiais de Ensino; Educação.

¹ Faculdade de Medicina da Universidade de São Paulo (FMUSP) – São Paulo (SP), Brazil.

² Universidade Ibirapuera (Unib) – São Paulo (SP), Brazil.

³ Universidade Paulista (Unip) – São Paulo (SP), Brazil.

RESUMEN | Se evaluó el resultado de las manifestaciones y las instrucciones utilizándose una película como un complemento en el proceso de enseñanza-aprendizaje de técnicas de masaje miofascial (MM). Se trata de un estudio experimental a doble ciego, del cual participaron una fisioterapeuta docente y 60 fisioterapeutas, que frecuentaron el curso de MM (a ciegas desde el objetivo del estudio). El curso duró 15 clases, en el cual se utilizó el libro *Masoterapia clínica* y las clases expositivas impartidas al grupo A (n=30). El mismo material y una película didáctica fueron utilizados por el grupo B (n=30). Mientras el libro describía e ilustraba los procedimientos, la película los demostraba en la práctica. Como evaluación al final del curso se realizó la grabación de una simulación de tratamiento, y después de dos meses se la hizo nuevamente para verificar la retención de los contenidos. Los participantes respondieron a un cuestionario sobre la satisfacción con el curso. Las grabaciones fueron evaluadas por dos fisioterapeutas. Se evaluaron: la presión

sostenida, la posición del paciente, la posición del fisioterapeuta, el número de procedimientos por músculo, la ubicación, la dirección y sentido de los procedimientos, el número de repeticiones de los mismos, la mano utilizada. Se valoró cada ítem como: 1=Técnica totalmente inadecuada; 2=Técnica con gran error; 3=Técnica con mínimo error; 4=Técnica satisfactoria; 5=Técnica totalmente adecuada. El análisis de la correlación intraclase comprobó la fiabilidad de los datos y reveló diferencias entre los grupos en cuanto a la habilidad de aplicar MM, con un mejor aprendizaje y retención en el grupo B ($p < 0,05$). Además, la utilización de la película redujo la duración de las clases en un tercio. Se concluyó que las instrucciones en la película complementaron los recursos tradicionales promoviendo ventajas al aprendizaje y retención de los contenidos.

Palabras clave | Fisioterapia; Masaje; Aprendizaje; Materiales de Enseñanza; Educación.

INTRODUCTION

Professors face the challenge of constant updating of their teaching methodologies in order to allow the transfer of theoretical contents and technical skills, with tools close to reality and assimilation in shorter periods of time^{1,2}. Their function is to guide the students in the content selection process, stimulating a critical and reflexive vision³⁻⁷. The professor is also expected to cause and encourage autonomy of thoughts and encourage discussions from the learning process and to supply feedback⁸⁻¹⁰. The increase of knowledge requires adding new content to be taught and, thus, the use of time should occur in a way to induce better outcome in smaller periods, without overloading the student. The use of new technologies allows to advance in this area, but, when the teaching focus is a technical activity that cannot be simulated, the use of orthodox manual resources seems to offer some support.

Gentile's "two-stage model" of learning motor skills proposes stages of fixation and diversification when teaching skills. In the first one, the objective is to reproduce exactly what was taught, which requires of the student capturing and adapting the basic pattern of domain and coordination of the movement to be learned. The second one proposes the repetition of the practical activity, which will favor the refinement of the basic pattern of the acquired movement and, in this case, the availability of models might help¹¹.

In Physical Therapy, there is a reflection on teaching strategies that consider instruction of specialized techniques, including manual therapeutic resources, as close as possible to the reality of performance¹². The contents of manual therapeutic resources include different techniques of massage therapy, among them the myofascial massage, characterized by the manual stretching of the fascia and muscle tissue, in order to normalize the relation between tension and length of the muscle, relieve pain and improve local circulation. It is traditionally taught by the observation of the maneuvers demonstrated by the professor and, then, by the students' repetition, emphasizing the quality of the maneuvers, positioning and posture of the physical therapist and analysis of responses to the intervention.

Multimedia technology brings didactical options that can be inserted in this context, for example, chats, contents in instructional digital versatile discs (DVD), distance learning and videoconferences¹³⁻¹⁵. The choice of the technological resource should allow new ways to think, understand, search and improve¹³⁻¹⁸. The professor should select relevant tools, and the educational institution should adjust the structure, equipment and training^{5,6,13,19}. Given this context, the use of DVD movies has proved to be a quite versatile and satisfactory strategy in the teaching-learning process, which allows to put the study in a participatory process, favoring learning²⁰⁻²⁹. There is a lack of studies on the use and adequacy of this feature, especially in the field of Physical Therapy¹⁵.

The objective of this study was to evaluate the effect of technical instructions using a DVD movie as a complement to conventional teaching, in learning and retaining MM.

METHODOLOGY

Study design

Experimental, double-blind study by indirect observation of movies, comparing two groups submitted to two forms of teaching. The study was performed in the Laboratory of Physical Therapy and Behavior of the Faculdade de Medicina of the Universidade de São Paulo (FMUSP) and was approved by the Research Ethics Committee of the same institution, process no. 254/13. All participants signed an informed consent form.

Participants

Professor: Physical therapist graduated 30 years ago, specializing in massage therapy. Regarding the MM, they received a 32-hour theoretical-practical study with the professor of the Therapeutic Manual Resources course, 64 hours of clinical training and 20 hours of teaching adaptation using slide show images obtained from the book and demonstration of the MM technique. Subsequently, they were trained to incorporate the didactic use of the movie to the course, for 10 hours.

Students: Group A (GA), with 27 women and three men, with average age of 23.7 ± 0.9 years, graduated in Physical Therapy 1.7 \pm 1.4 years ago, 20 with specialization and ten with extension courses. Group B (GB) with 26 women and four men, with average age of 22.9 ± 0.9 years, graduated 1.5 \pm 1.7 years ago, 17 with specialization and 13 with extension courses. None had participated in a course on MM.

Intervention: teaching the MM technique

Course of three consecutive weeks, three hours/day, 30 vacancies, offered for two consecutive semesters. Requirements for participation: at least one and at most two years of clinical experience and having no experience with MM.

Participants in the first semester composed GA and took the traditional course of classes with slides organized from the *Massoterapia Clínica* book²⁹, by Clay and Pounds,

and the book itself. After the explanation, they replicated and trained in pairs as physical therapist-patient and vice versa.

Participants of the course of the following semester composed GB and took classes with slides and a DVD movie. During the practice, they received the book and the demonstrative DVD of the technical maneuvers released by the book authors (with notebook for replication in a 30x30cm table positioned beside the stretcher). After explanation, they also replicated and trained in pairs. During the practice, they could solve doubts on the maneuvers by re-watching the DVD. In both groups, the professor went around the room correcting maneuvers and discussing questions.

Data collection and analysis

Collection referring to the students' technical performance

Exams at the end of the course and after two months, when the replication of the MM maneuvers in the muscles of the head was requested. The tests were filmed and subsequently analyzed by two examiners specialized in manual therapy and connoisseurs of the technique³⁰, blinded to the objective of the study.

Eight items were evaluated: 1) pressure; 2) patient positioning; 3) physical therapist positioning; 4) number of maneuvers per muscle; 5) location; 6) direction of the maneuvers; 7) number of repetitions of the maneuvers; and 8) hand segment used.

Each item was scored by the evaluators in accordance with the adaptation of the model proposed by Likert (1: totally inadequate technique; 2: technique with great failure; 3: technique with small failure; 4: satisfactory technique; and 5: Completely adequate technique)³¹.

The exams took place at the end of the courses (Test 1), aiming at learning analysis, and two months after the courses, aiming at retention analysis (Test 2).

Collection on students' perception regarding the pedagogical method tried

Students' perception was assessed through a brief questionnaire and one open question.

Questionnaire:

1. What is your opinion about the way of teaching in the course you just took?
2. List and discuss the pros and cons of the way of teaching.
3. Open question: make suggestions of improvement.

Analysis of students' perception regarding the pedagogical method tried

The answers obtained in the interview were recorded and subsequently transcribed for analysis by category of answers.

Collection of the time used by the professor for teaching

The time used by the professor to teach the courses, which allowed a maximum period of four hours for teaching, was recorded in the two groups with a simple clock, per class.

Analysis of time used by the professor for teaching

The measurements, per class, for both teaching interventions, were compared through the Student's t-test.

RESULTS

Analysis of learning and retention

To compare the scores given in the tests of the two groups, the analysis of variance was used (Anova). The intra-class coefficient of correlation was used to analyze the inter-examiner reproducibility, and the grades had good consistency, with coefficient of 0.92 (group A), 0.95 (group B), 0.94 for the total exams collected at the end of the course (learning) and 0.95 for the exams collected in

the movies obtained with the tests performed two months after the end of the course (retention). As no statistically significant difference was found between the analyzed values, we opted for the use of the scores provided by evaluator 1, since the evaluator 2 was inserted in the study to ensure reliability of the collected data.

The mean score (and standard-deviation) of the tests of the two groups was analyzed through the Anova for the groups (A and B) and tests (1 and 2). Then, the Tukey *post hoc* analysis was performed.

Figures 1 and 2 show the technical performance assessed from the scores of the evaluated technical criteria.

There was an interaction between groups and exams in the items "therapist positioning" ($F_{1,58}=7.85$; $p=0.007$), "patient positioning" ($F_{1,58}=5.45$; $p=0.023$), "location of the maneuvers" ($F_{1,58}=9.93$; $p=0.003$) and the number of repetitions ($F_{1,58}=23,32$; $p<0,001$). For the evaluation criteria "therapist and patient positioning", the GA had a worse performance than GB in Test 1, and although it had a better performance in Test 2, it remained below GB ($p<0.005$).

In criteria "location of maneuvers" and "number of repetitions", the data showed that, in Test 2, GA showed worse retention than GB for both items ($p<0.005$). The movie might have promoted a better source of memorization of the maneuvers than teaching with a demonstration made by the teacher. The repeated access to the movie may also have contributed to the result found, since this did not happen with the demonstration made by the teacher.

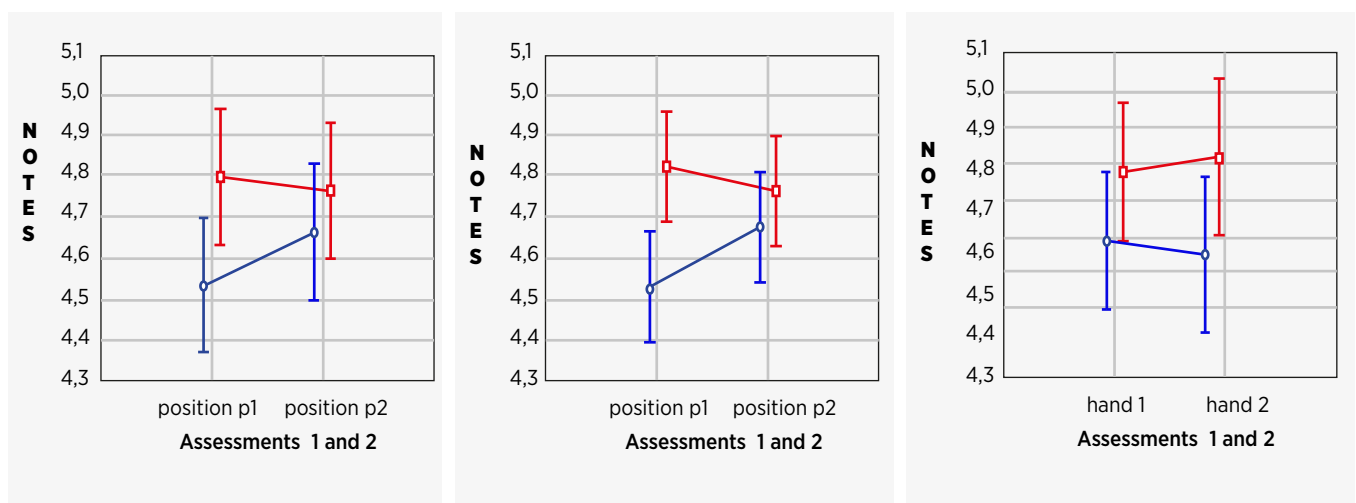


Figure 1. Performance comparison of groups A and B in the moments of evaluation at the end of the course (Test 1) and after two months (Test 2), for the criterion "positioning and use of hands". On the left, "patient positioning". In the center, "therapist positioning". On the right, "hand segment used".

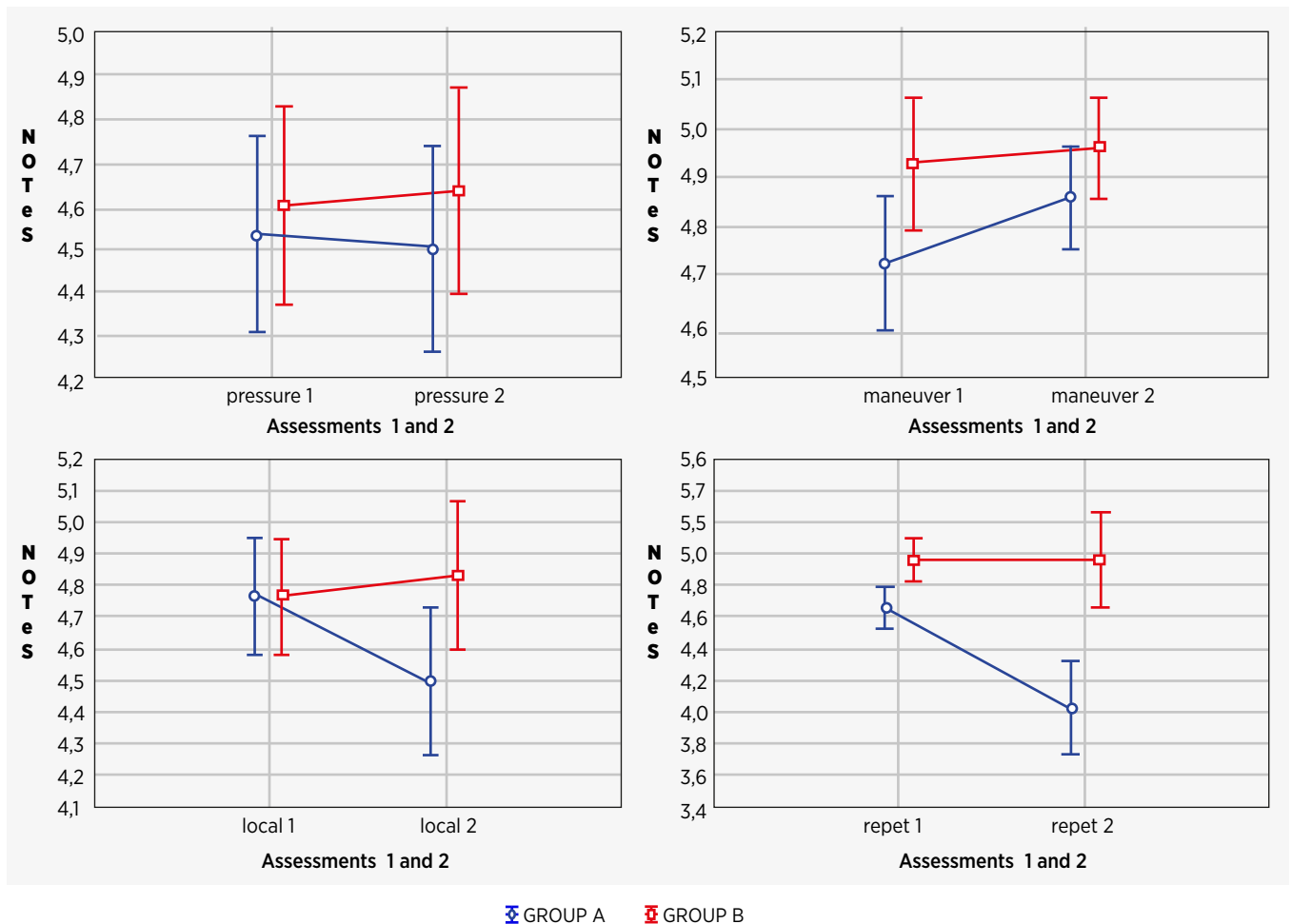


Figure 2. *Technical performance.* Performance comparison of groups A and B in the moments of evaluation at the end of the course (Test 1) and after 2 months (Test 2), for the criteria: upper left, “apparent manual pressure”. Upper right, “maneuvers by segment”. Lower left, “location of the maneuvers”. Lower left, “repetition of the maneuvers”.

There was no interaction between groups and exams in the number of maneuvers ($F_{1,58}=1.96$; $p=0.167$), however, there was a difference between groups ($F_{1,58}=3.93$; $p=0.050$); GA had a lower performance than GB, and Test 2 had a higher score than Test 1. In the items “hand positioning” and “manual pressure”, there were no significant differences between groups and examinations ($p>0.050$).

Students’ opinion of the didactic of the courses

The answers found are listed in Table 1, in which the number of students who referred to each one of the categories are shown. Eight categories of answers were found in the comments about the pros of the courses. All GB participants, who had access to the movie, reported “visualization of the maneuver as many times as necessary” as a didactic advantage of the course. Regarding the citation of the category “Stimulating

method”, 17 GA students made the reference, against 28 students from group B. In the category “Stimulation of learning autonomy”, this reference is more shocking, since we have 22 mentions from GB against none from GA.

Three categories were found in the comments on the cons regarding the didactic methodology of the courses. The presence of a single professional was mentioned by 16 students from GA, but not by any student from GB. GA had 11 students who found it difficult to remember all the maneuvers, while, in GB, only four students made this comment.

Regarding the categories of answers found in the open question, which asked for suggestions of improvement for the didactic form of teaching, 15 students from GA asked for monitors, while this category of answers was not found in GB, indicating that the movie had the function of a monitor.

Table 1. Category of answers for pros and cons of the improvements regarding the methodology used. It also shows the number of students (n) who referred to each of the categories listed.

Category	Group A Number of citations (n)	Group B Number of citations (n)
Pros		
1. Visualization of the maneuver as many times as necessary	0	30
2. Experienced professional available	25	26
3. Good training time	18	28
4. Access to the book to remember what the professor said	25	25
5. Good division of number of classes/contents	19	23
6. Stimulating method	17	28
7. Teaching method facilitates training	20	24
8. Stimulation of learning autonomy	0	22
Cons		
1. A single professional/without monitors	16	0
2. Doubt on the maneuver over time	11	4
3. Lack of training with real cases	4	11
Suggestions for improvement		
Monitoring	15	0
Body map (poster)	4	0
Training with patients or clinical cases	4	11
Feedback with filming in every class	0	6

Time used by the professor for teaching the courses

In GA, there were 15 classes with about 180±12 minutes, totaling 45 hours, while in GB, there were 15 classes with about 120±18 minutes, totaling 30 hours, with a significant difference ($p < 0.001$) in the time spent teaching.

DISCUSSION

The use of a DVD as complementary tool in teaching MM facilitated learning and allowed good retention, and the students that used it did not suggest monitors, did not report unsolved doubts throughout the course and referred better learning autonomy. In addition, less time in the classroom was necessary to complete the course.

Learning and retention

In all the assessed items, GB showed better grades than the GA, with significant difference in the items

“therapist positioning”, “patient positioning”, “location of the maneuvers” and “number of repetitions of the maneuvers”, which showed interaction between groups and evaluations.

In the items “hand positioning” and “manual pressure”, there was no statistical difference in learning and retention between the groups. Learning the amount of manual pressure is also not favored by the DVD, though both groups properly learned it and did not differ in these abilities; this is because of the great emphasis given by the professor to these items in the courses, due to its importance.

This study compared the traditional method with teaching with the aid of a DVD movie and verified equivalence in the grades and, in some items, a greater score for teaching with the DVD, and this difference is not statistically significant, but indicates that this resource can be used more frequently²¹⁻²⁹.

Lee et al.²⁷ suggest that the use of an instructional movie of clinical abilities demonstrates better learning results in comparison with the traditional didactic teaching (face-to-face). Raja²⁸, in the analysis of walking in patients with cerebral palsy, observed that the group with a DVD obtained a greater statistically significant difference in relation to the group of traditional classes in the post-test and three months after.

De Vries et al.²⁶ compared training with an instructor *versus* three training methods with DVDs for the use of an external automatic defibrillator, and concluded that the performance of groups who used the DVD is significantly better in the knowledge retention test (two months after), however, those who received practical training scored higher compared to the training groups based only on the use of DVDs, concluding that training with DVD but without practice is not recommended.

Students' opinion on the didactic of the courses

The acceptance of the multimedia technology was relevant; 76% of the physical therapists from GB reported it as didactics that stimulates learning autonomy, and 92% of the students stated that the time was appropriate for learning. No physical therapist from GA reported the didactics as stimulating for autonomy and 60% of them considered the teaching time appropriate but emphasizing that they needed more time to develop the learned technique.

The didactic movie promotes greater content interaction with students, stimulating them to watch it

as many times as necessary to understand the maneuver, respecting each one's learning time, allowing greater autonomy in the assimilation of technical skills^{14,20}. The availability of this resource decreases costs, since it is not a face-to-face support and it can be used in different disciplines with different focuses^{27,29}.

Time used by the professor for teaching the courses

The duration of GB classes was smaller, since the didactic movie assisted in the execution of the maneuvers by students, speeding up the teaching-learning process. Therefore, there was a decrease of one-third of the total time in favor of GB.

No studies in literature were found describing that less time is necessary for a course with the use of didactic movies. Learning depends on the availability of the adequate means and can be affected by the time required to present contents and by the motivation of students and professor.

Further studies are necessary to better understand the use of multimedia technology resources in the teaching-learning process. Future observations will be able to explore different contexts of use of didactic movies, such as the use of actors in situations similar to real ones and patient filming, thus generating indicators for the use of movies as a didactic complement in different educational contexts.

Studies on the use of movies as complement in teaching and learning do not address the analysis of the time required for training, with and without this tool. However, this deserves attention, since, with the development of researches and the increase of contents to be taught, the good use of time becomes one of the essential requirements to allow teaching all the planned content in a motivating and stimulating way.

CONCLUSION

Didactic movies can be used as a complementary didactic resource to demonstrate technical skills during the teaching and training of MM, with increased learning and good retention.

The acceptance on the part of physical therapists was good, and there was a decrease in the time required for training. The reorganization of the available time to teach this content allows, thus, the insertion of other resources,

such as the presentation of other professionals specialized in the content and clinical cases, with accompanying images.

The possibility of generating new didactic materials in the form of movies, or even interaction via real-time videoconferencing, seems a viable and very interesting proposal according to the findings of this study.

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