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Online learning basketball using social media to enhance learners' performance of some fundamental skills

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Abstract:

BACKGROUND: Online learning is the newest and most popular form of distance education today; within the past decade it has had a major impact on education. The aim of the present study was to know the effect of online learning basketball using social media on learners' performance of some fundamental skills in basketball and determine difference between online learning and in-person learning, knowing which one is better than the other.

MATERIALS AND METHODS: The present experimental study was conducted in Sports Academy for Basketball in Zagazig-Egypt during March–April 2022. Thirty two female junior basketball players volunteered to participate in the study from Sports Academy for Basketball (age: 16.23 ± 0.66 years; body height: 164.5 ± 3.32 cm; body mass: 65.25 ± 3.22 kg). They were divided into two equally sized experimental groups, online learning (ONL) group ($n = 16$) and in-person learning (INL) group ($n = 16$), to perform (15) educational sessions for (5) weeks, (3) sessions per week, and the session time was 90 minutes. Junior basketball players were assessed before and after five-week training period. Data were collected by Basketball Passing test, Dribbling Skill test, Lay Up Shoot test, Speed Spot Shooting, and Free-Throw Shooting test. The collected data were analyzed using SPSS version 22 software using the descriptive statistical test. The level of significance was set at $P \leq 0.05$.

RESULTS: The results showed that the two groups made significant improvements in all variables but INL group had significantly greater improvements than ONL group. The percentage of improvement ranged from 13% to 223% for INL group versus 8% to 158% for ONL group.

CONCLUSION: We conclude that in-person basketball learning was better than online learning basketball. Therefore, teachers and trainers must rely primarily on in-person learning and not rely on distance learning, especially with regard to learning motor skills, except in emergency cases.

Keywords:

Dribbling, in-person learning, online learning, passing, social media, speed shooting

Introduction

Social media is a collective term for websites and applications that focus on communication, community-based input, interaction, content-sharing, and collaboration. Social media designed to facilitate communication between

people around the world, by interacting through posts, conversations, or audio and video calls. Social media aims to build and facilitate communication between communities around the world, by sharing their interests, activities, and opinions through these applications. The ability to share content from photos, posts, and events has changed the way we live and added

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new ways to make much of our work easier. Facebook, Messenger, WhatsApp, Instagram, and Twitter are free social networking websites where registered users create profiles, upload photos and videos, send messages, and keep in touch with friends, family, and colleague. Social media has become pervasive particularly among youth and young adult populations. Use of social network sites has become staple among collegiate student athletes.^[1] Social media can help teachers connect with students even when they are outside the classroom. Smith and Watkins advocated that athletic departments cultivate responsible attitudes toward social media literacy through positive education. Using social media platforms can provide students with unlimited resources and texts from trusted sources and they can use it to their advantage in articles, projects, and presentations. They can also use it as a way to give and receive feedback at any time.^[2] It bridged the gap in communication between students and teachers because students are able to present and respond almost instantly; it has been noted that this increase in communication has led to a deeper understanding of the classroom material and the provision of unlimited free resources, audio and video record, photos, projects, and presentations.

Social media is defined as a group of Internet-based applications based on intellectual and technical foundations that allow the creation and exchange of user-generated content. It relies on smart devices and technology based on the Internet that allow creating interactive platforms through which individuals can participate or contribute to the creation of knowledge or discuss and modify what others provide.^[3] The popularity of social media sites has grown among young people including college students because of the enjoyment to connect and share views or photos back and forth with their personal networks. College students often use social media to express themselves, including their political views, leisure activities, places to study, favorite classes, or television shows. These behaviors allow students to express themselves in meaningful ways.^[4]

Distance learning that is providing education to students who are separated by distance and in which the pedagogical material is planned and prepared by educational institutions. The study of Nadeak (2020) aims to analyze the effectiveness of distance learning using social media during the COVID-19 pandemic. This study used a survey method using a questionnaire conducted online to 250 students. The results showed that distance learning using social media is only effective for theoretical and theoretical practical courses, whereas in practice courses and distance field courses using social media is felt to be less effective.^[5] Al-Rahmi and Zeki (2017) conducted a study to explore the use of

social media in the process of collaborative learning through learning Quran and Hadith. Three hundred forty respondents participated in this study. The study reported direct and indirect significant impacts on collaborative learning through the use of social media which might lead to a better performance by learners.^[6]

Online learning is exactly what it sounds like: classrooms and subject materials are all covered virtually. In-person learning is the traditional way of learning, where students attend face-to-face classes at allotted times. Learning is not the way that used to be a year ago; education has also evolved to connect students and instructors in virtual classrooms. Because of COVID-19, some areas of life have seen innovation to keep people safe and online learning applications are not new, but they have been massively improved upon in recent years due to the pandemic. Online learning has exploded in the higher education scene in response to COVID-19.

The basketball game contains many offensive and defensive skills that require the player to be highly efficient, as the result of the match sometimes changes in a very short time, due to the optimal skillful performance of the players in the match. Hence, adolescent basketball players striving to reach the highest standard of performance needed to develop outstanding performance characteristics.^[7] The importance of skillful performance in the basketball game is that individual failure to perform a skill negatively affects the entire team, as the performance must be integrated, otherwise it will be useless and will not have a positive impact on the team's result. Because of the importance of offensive skills and their great role in the game, as they are the basis for changing the outcome of the match and determining the winner. Therefore, this study focused on offensive skills. Basketball is a type of complex game of movement. This means that the movement consists of a combination of neatly coordinated motion elements. In basketball games there are several basic techniques known as dribble, passing, and shooting. These skills are a fundamental technique in basketball games. Some believe that these skills can only be learned through in-person teaching. Therefore, this study aims to find out if these skills can be learned through online teaching and to know the difference between in-person learning and online learning. To the best of our knowledge, this study represents the first report on the use of online learning using social media by basketball players in Egypt. We found that most junior basketball players were using social media for academic purposes and believed that teaching online using social media usage has a positive impact on their academic performance of some fundamental skills in basketball. Hence, the importance of the research to prove the effectiveness of online teaching using social media in learning to develop

some offensive skills in basketball and know whether or not in-person learning is better than online learning. Hence, the purpose of this study was to determine the effect of online learning basketball using social media on learners' performance of some fundamental skills in basketball and determine is one really better than the other.

Materials and Methods

Study design and setting

The present study adopted an experimental research approach and carried out during March–April 2022 in Sports Academy in Zagazig-Egypt, in which the subjects were randomly assigned to two equally sized experimental groups.

Study participants and sampling

An experimental study was conducted in 32 female junior basketball players who volunteered to participate in the study from Sports Academy for Basketball in Zagazig-Egypt were selected through a web-based survey (Google form) (age: 16.23 ± 0.66 years; body height: 164.5 ± 3.32 cm; body mass: 65.25 ± 3.22 kg). They were divided into two equally sized experimental groups: online learning (ONL) group ($n = 16$) and in-person learning (INL) group ($n = 16$). Before applying the learning program, a comparison was made between the two experimental groups in pretest for all study variables. No significant differences between the two groups were observed. It was ensured that the two groups are equivalent in terms of chronological age, training age, and skill level before conducting the study.

Data collection tool and technique

To collect the data, five skill tests were used to measure each of the tests (Passing, Dribbling, Lay Up Shoot, Speed Spot Shooting, and Free-Throw Shooting). Moreover, some educational videos were used during the implementation of the educational program; the tests were carried out as follows.

Basketball passing test

The player stands behind the restraining line, holding a basketball and facing the far left wall target (A). Each player performed a chest pass to the first target square (A), recovered the ball while moving to the second target square (B), and performed a chest pass to the second target (B). The player then continued this action until he reached the last target (F). While at the last target (F), they threw two chest passes and then repeated the sequence by moving to the left, passing at targets E, D, and C, and so on. Two points were awarded for each chest pass that hit the target or on the target lines.^[8] The test-retest reliability for dribbling skill test was $r = 0.82$.

Dribbling skill test

Each subject performed three trials: the first as a practice trial and the last two scored for the record. An obstacle course marked by the six cones was set up in the free throw lane of the court. Participants dribble around six cones using fingertips until the finish line was crossed by both feet. Scores were recorded to the nearest 0.10 of a second for each trial and the final score will be the sum elapsed time of the two trials.^[9] The test-retest reliability for dribbling skill test was $r = 0.83$.

Lay-up shoot test

Player stands at the juncture of the free-throw line to the left or right. The player dribbles toward the goal and attempts a field goal outside the 2.75-meter arc. This attempt must be taken anywhere outside the 2.75-meter arc marked off by a dotted line. The player then rebounds the basketball and dribbles anywhere outside the arc before attempting another field goal. Each participant performed 10 attempts divided into two sections, each section five attempts. One point is awarded for each field goal made.^[7] The test-retest reliability for Shoot test was $r = 0.81$.

Speed spot shooting test

Player performed two trials of a speed spot shooting skills test. The floor was marked with five spots at a distance of 15 feet measured from the center of the backboard. Player was instructed to shoot from each of the five spots at least once and as many times as possible throughout a 60-second period. Two points was awarded for each successful basket and 1 point was awarded for an unsuccessful shot that hits the rim. Final score was recorded as the total points from the two trials.^[9] The test-retest reliability for speed spot shooting test was $r = 0.84$.

Free-throw shooting test

Each participant performed 20 basketball free throws. Throws are made from behind the free-throw line, and for each laboratory, 20 attempts are made, and the 20 throws are made in groups of five shots each. Participants were asked to shoot within five seconds after permission to start. A practice session with several trials was performed before recordings in order for participants to warm up and become familiar with the conditions. All participants used the same basketball and all performed two-handed shots. One point is calculated for each successful basket made by the participants.^[10] The test-retest reliability for Free-throw shooting test was $r = 0.86$.

Educational videos

Some educational videos and kinetic models of the offensive skills in question were used through the following sites:

<https://www.breakthroughbasketball.com/drills/basketballdrills.html>^[11]

<https://www.jes-basketball.com/animated/drills.html>^[12]

<https://www.coachesclipboard.net/Animations.html>^[13]

<https://www.basketballforcoaches.com/basketball-drills-and-games-for-kids/>^[14]

<https://www.online-basketball-drills.com/basketball-drills>^[15]

Experimental procedure

The proposed educational program included 15 educational sessions for five weeks, three sessions per week, and the session time was 90 minutes, which included 15 minutes of general and private warm-up, and the main part of 70 minutes which included in the educational and applied activity, and 5 minutes in the end part of the session which included calming exercises. The two experimental groups followed the same units and skill exercises but the difference between them was in the method used to implement the educational units. The exercises were given to the INL group in the presence of the traditional method which depended on the teacher, whereas the ONL group was given online training using social media. Groups were created to participate on Facebook and WhatsApp; all illustrations, technical points, and educational videos of offensive skills were shown through Facebook and WhatsApp. The exercises were divided into five topics as per the offensive skills (Passing, Dribbling, Free-Throw Shoot, Speed Shooting, and Lay Up Shoot). The topics were distributed on the educational units so that each topic included three sessions with a total of 15 training units. All learners were given enough time to view the pictures and educational videos and to see the attached instructions, while making sure that all learners follow-up the videos and pictures and understand them in preparation for discussing, applying them, correcting mistakes, and taking notes. Learners were encouraged to learn cooperatively through discussion, exchange of ideas, and troubleshooting among themselves. Data were collected before, immediately after, and five weeks after the educational program. Finally, all statistical analyses were performed using the IBM SPSS program, version 22.0. Descriptive statistics (mean and standard deviation) were calculated for each variable. All data were normally distributed using the Kolmogorov-Smirnov test. To detect the differences between premeasurements and postmeasurements in each group, a two-tailed paired sample *t*-test was conducted between the pretest and post-test for each variable to determine statistical significance. An independent *t*-test has been used to evaluate the difference between groups before and after educational program for each variable. The level of significance was set at $P \leq 0.05$.

Ethical considerations

An ethical approval of the project was made by Institutional Human Ethics Committee (EC No: 18/2022); the participants entered the study only after they gave an informed written consent. The participants in both groups were informed about the purpose of the study and method of data collection. All testing and training procedures were fully explained; the subjects were informed about the possible risks and benefits of the study. The ethical concerns like confidentiality and the rights of respondents to drop out any time they wish were ensured. Study participation was voluntary; moreover, permission to enter the research field was obtained from a person in authority before data collecting.

Results

No subject sustained an injury as a result of the educational program. All subjects completed at least 13 of the 15 training sessions. The two groups demonstrated statistically significant improvement between pretest and post-test in the fundamental skills, which include Passing, Dribbling, Free-Throw Shoot, Speed Shooting, and Lay Up Shoot ($P < .05$) as shown in Tables 1 and 2. There were no intergroup differences in all variables before the program, but after the educational program there were significant differences between groups as shown in Table 3. INL group demonstrated a significant improvement better than the ONL group in offensive skills (Passing, Dribbling, Free-Throw Shoot, Speed Shooting, and Lay Up Shoot). Figure 1 shows the percentage of improvement in fundamental skills used in the research for the two groups which ranged from 8% to 158% for ONL group and 13% to 223% for INL group. These results indicate that the educational program had an effect in improving offensive skills for ONL and INL groups, but the INL group improved better than the ONL group.

Discussion

The main purpose of the study was to determine the effect of online learning basketball using social media

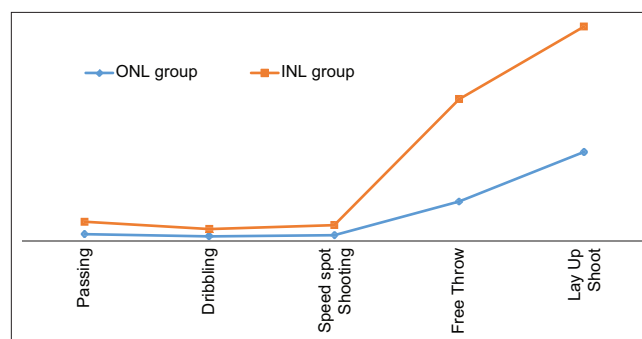


Figure 1: The percentage of improvement in offensive skills between online learning group (ONL) and in-person learning group (INL)

Table 1: Means, standard deviations (SD), and significant differences between premeasurement and postmeasurement for online learning group (ONL) on offensive skills

Variables	Pretest		Post-test		t	P
	Mean	SD±	Mean	SD±		
Passing (points)	39.41	1.92	44.16	2.44	9.61	0.01
Dribbling (sec)	18.90	0.88	17.30	0.59	9.40	0.01
Speed Spot Shooting (points)	20.41	1.31	22.41	1.51	7.26	0.01
Free Throw (points)	3.43	1.30	5.83	1.26	7.18	0.01
Lay Up Shoot (points)	1.60	0.67	4.13	1.00	10.21	0.01

Table 2: Means, standard deviations (SD), and significant differences between premeasurement and postmeasurement for in-person learning group (INL) on offensive skills

Variables	Pretest		Post-test		T	P
	Mean	SD±	Mean	SD±		
Passing (points)	39.25	2.00	48.01	1.41	11.51	0.01
Dribbling (sec)	19.03	0.88	16.60	1.10	9.01	0.01
Speed Spot Shooting (points)	20.25	1.42	23.83	1.19	10.01	0.01
Free Throw (points)	3.70	1.36	10.43	1.35	18.45	0.00
Lay Up Shoot (points)	1.63	0.71	5.26	1.04	15.98	0.00

Table 3: Means, standard deviations (SD), and significant differences in the postmeasurement between experimental groups (ONL and INL) on offensive skills

Variables	(ONL)		(INL)		t	P
	Mean	SD±	Mean	SD±		
Passing (points)	44.16	2.44	48.01	1.41	4.70	0.00*
Dribbling (sec)	17.30	0.59	16.60	1.10	3.06	0.01*
Speed Spot Shooting (points)	22.41	1.51	23.83	1.19	2.55	0.01*
Free Throw (points)	5.83	1.26	10.43	1.35	13.60	0.00*
Lay Up Shoot (points)	4.13	1.00	5.26	1.04	4.26	0.00*

ONL, Online learning group; INL, In-Person learning group *P<0.05

on learners' performance of some fundamental skills in basketball. This study is one of the first studies that has investigated the effect of online learning basketball using social media. The main finding of this research was firstly the existence of a positive effect of online learning basketball using social media on learners' performance of some fundamental skills in basketball (Passing, Dribbling, Free-Throw Shoot, Speed Shooting, and Lay Up Shoot). The improvement in the performance level of the ONL group is due to the use of social media, which provided the opportunity for learners to publish educational videos and repeat them more than once to master the skillful performance. Social media is emerging as a powerful tool with the continuous expansion of technology and other factors, in spreading awareness and education of various socially relevant concepts. The content will always be available for the users whenever they want. The social media platforms are providing them a variety of benefits such as communication, enhanced learning opportunities, and accessing information.^[16]

Thus, online learning using social media can create a learning place beyond the classroom.^[17] In addition, social media can minimize the effort to make learning program and even make it in a dynamic way. Hence, used it as a platform in which all required connection and interaction occurs and involves various media types such as photos, videos, audio files, and blogs. Social media can be an essential tool to reach all students easily. Moreover, social media which is more related to our topic can improve collaboration among users.^[18] In addition, online learning can used to delivering the course. As printed material, e-texts, textbooks, and e-zines; as video material, streaming video, video tape, and satellite transmission; as audio material, streaming audio, and audio tape; for asynchronous communication e-mails, weblogs, and forums; for synchronous communication, chat, videoconference, and teleconference can be used. All of these contributed to the development of the level of performance of some fundamental skills in basketball (Passing, Dribbling, Free-Throw Shoot, Speed shooting, and Lay Up Shoot). Social media can engage students in active learning through user-generated content, facilitation of communication and feedback, collaboration, and access to resources without physical location restrictions. Most students take a positive view and feel that it can facilitate their academic performance. The study of Lahiry *et al.*^[19] confirmed that social media in education usage among medical students has also witnessed tremendous surge. It is presenting medical educationists with new paradigms in teaching-learning activity. In addition, a responsible use of social media by students will contribute to both their education and professionalism. Kumar *et al.*^[20] referred to the effectiveness of online learning is influenced by many factors. Some factors create barriers for online learning, such as administrative issues, social interaction, academic skills, technical skills, learner motivation, time and support for studies, technical problems, cost, and access to the internet. Other factors could result in low-quality online learning. Therefore, these factors were taken into account during the study to ensure the results of the study and achieve its purpose. All of these contributed to achieving the purpose of the study, which is the effectiveness of online learning basketball using social media on learners' performance of some fundamental skills in basketball.

The results also showed a positive effect of in-person basketball learning on learners' performance of the same fundamental skills. This is due to in-person learning providing a safe, rigorous, and fun; the best academic and social-emotional experience and development for students; and a safe learning environment that continues to follow the Centers for Disease Control guidelines. Through it, students thrive and meet their goals of college. Second, the finding shown that

in-person basketball learning was better than online learning basketball as shown in Figure 1. Perhaps this is due to students learn more when they are in-person at college. Students receiving in-person instruction have fewer distractions, increased concentration, and can receive more direct, personalized learning experiences that keep them from falling behind. Also, teachers can better connect with each individual student and offer more personalized one-on-one attention and coaching. So interactivity is the key in a learning environment. This can be harder to achieve without time spent in the physical classroom, particularly if online learning is delivered to a large class rather than in small tutored groups or one-on-one environments. Students participating in in-person learning also benefit from more collaborative and hands-on work with their peers. Students can more easily ask questions and solve problems directly with teachers and peers in real-time. Being together in a classroom allows a teacher to guide each student as per their unique abilities and have a good perspective on whether the learners themselves are using them to their best ability. Interestingly, our study revealed an important trend regarding online learning basketball using social media. This trend of learning contributes to developing and acquiring skill performance as it is no less important than in-person teaching. The current circumstances, as a result of the spread of the Corona virus, imposed a halt to sports activity and the inability of coaches to train players due to the ban imposed by some countries. Therefore, the results of this study contribute to creating new horizons in learning sports games via online learning using social media. Online education could be a consistent solution to accommodate this problem. Education is going to be digital in the foreseeable future and with the right infrastructure and policies in place, we would be better prepared to handle it.

Limitation and Recommendation

Investigating on effectiveness of online teaching using social media in learning to develop some offensive skills in basketball was one of the strengths of the present study. The present study was limited to basketball players at the Sports Academy in Zagazig, so the research sample was limited, in addition to the difficulty of providing unlimited Internet to download educational videos that are shared through social media. Based on the findings of the research, it is suggested that researchers evaluating the impact of online learning using social media in physical education can look at the opportunities and challenges in integrating social media in the current framework for physical education teaching and examining the obstacles to using social media in the university education system. The findings of this survey can help in the planning of future studies

and policy development in this regard and conducting similar studies on other skills and different samples in the age groups.

Conclusion

The major conclusion drawn from this study as per the results was that there was a positive effect of both online learning basketball using social media and in-person basketball learning on learners' performance of some fundamental skills in basketball (Passing, Dribbling, Free-Throw Shoot, Speed Shooting, and Lay Up Shoot). The finding also shown that in-person basketball learning was better than online learning basketball. Therefore, teachers and trainers must rely primarily on in-person learning and not rely on distance learning, especially with regard to learning motor skills, except in emergency cases where it is difficult to communicate directly with students, as online learning will gain them skill performance, but the in-person learning will be the best choice for high-level development.

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Conflicts of interest

There are no conflicts of interest.

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