

Teaching wrestling at school: proposal of a new pedagogical approach based on games for learning of technical moves

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Abstract

Background and Study Aim The purpose of this study was to find the effect of the game based on educational method and technical approach on the performance of legs attacks in free-style wrestling.

Material and Methods The type of research was semi-experimental. Participants included 20 boys' students who were divided into two groups based on the game-based approach (10) and technical training (10). The teaching unit was a format of 12 lessons over 4 weeks (2 days per week). Each lesson lasted 60 minutes. At the end of each training session, the participants played benchmark bouts, one on one, for 2 x 6 minutes. The data were analyzed using SPSS 16 software at a significance level of 0.05.

Results The results showed that both the game-based and technical approach groups had a significant improvement in successful leg attacks in free-style wrestling. With regard to the preparation of leg attacks, there was no improvement for the technical approach group. However, the game-based group had a significant improvement in the total number of attacks compared to the technical group.

Conclusions The results suggest that the use of a game-based educational method can significantly increase the important factors of wrestling performance related to leg attacks in young wrestlers. Teachers can connect actions from other technical movements from the same family of leg attacks.

Keywords: game, educational method, traditional practice, performance.

Introduction

Physical Education and Sport teachers have an important part to play in introducing students to sport, as qualified professionals to provide experiences and motivation for a physically active life for every young student. Sport can offer a wide range of educational opportunities for students, but it should be noted that a new specific pedagogy should replace the current traditional pedagogy, which is based on technique as the only learning approach to sport [1-4]. Generally, traditional approach emphasizes skills and techniques regarded as fundamental to the successful practice of specific popular sports such as wrestling. These techniques were practiced repeatedly until the students could practice them sufficiently [5]. Moreover, practical knowledge for sports initiation are limited and sports teachers should not rule out the possibilities of offering multiple physical practices. This must provide a learning environment that promotes positive young people's development [6-9]. It seems essential in this sense that pedagogical models should be thought by objectives in order to provide learning contexts that promote opportunities and experiences for children to become competent and enthusiastic players in the game and motivated

to engage in physical activities [2]. Melki et al. [10] indicate that wrestling is universal and offers opportunities for students of all sizes and physical abilities. Wrestling can be safe and playful, and give children the opportunity to develop physical skills such as speed, agility and muscular endurance [11-13]. Participation in wrestling, due to its physical and tactical character pushing emotional levels, offers unique experiences of moral development such as maturity of self-concept, decision-making, self-control and sports man ship [14-16]. For Gibbons et al. [17] under the concept of fair play, students can learn to respect the rules and develop personal and social responsibility for their behavior. Wrestling also differs from other combat sports in that it does not allow opponents to hit each other, which makes it safer for students. Wrestling is a physical as well as a mental challenge and the objective is not to hurt another person but to outwit and control the opponent [18]. Zi-Hong [19], defined wrestling as a dynamic and combative sport of high intensity that requires complex skills and technical excellence to succeed. According to the research results of Fujiyama et al. [20] the technical-tactical analysis of freestyle wrestling bouts showed that leg attack moves were the most used technique for scoring points. Cipriano [21] showed that winners of international wrestling tournaments

performed almost two times more successful leg attack manoeuvres than their opponents. While the leg attack might be more effective by reducing the distance between the attacker and the opponent, this would also inevitably increase the risk of an attack by the opponent. Therefore, maintaining a committed minimum distance between the wrestlers is essential to execute effective attack and defense manoeuvres. Wrestling can play an important role in attracting kids to do combat sports and develop their physical abilities. However, the problem is that they do not like technical learning exercises that have little physical mobility and joy and this is the result of traditional educational models in physical education classes. In this sense, Williams [22] confirmed that the traditional method of training and performance improvement emphasises the use of a teacher-centered approach. As a result, skills are practiced in the form of exercises and in a form that is separate from the real context. Ohya et al. [23] stated that one of the important limitations of traditional training models is the inability to transfer the skills learned on the wrestling mat, which results in a significant performance gap in the fight performance. Gabbett et al. [24] concluded that wrestling is an intermittent sport that requires wrestlers to compete in short, frequent periods of high-intensity exercise followed by periods of low-intensity activity. Because of its physical and physiological demands, Perriello et al. [25] mentioned that wrestling has a limited presence in secondary schools and teachers generally select sports according to their field and their knowledge of the disciplines. In addition, viewpoints, perceptions of danger and violence among combat sports teachers do not allow them to be seen as capable of developing the values and positive attitudes associated with the practice of sport.

Finally, we want to make clear that in the literature these teaching proposals based in an educational-training model are very scarce [26]. This lack of scientific production in the area creates a great interest to know the opinions and beliefs of future graduates about wrestling. An approach called learning based games has been developed in recent years in order to combine the elements of competence and conditioning in a coherent approach [27]. According to Magill [28], moving from practice to the gaming environment depends on how closely the practice or training resembles the game. In order to expose players to the intensity, decision-making, speed and skill execution required in competition, practice sessions must replicate actual events and phases of play. The use of game-based methods as learning exercises allows for the simulation of movement patterns in attack and defense in wrestling, while maintaining a competitive environment in which students must work under pressure and fatigue [29]. However,

research regarding the effectiveness of game-based training is limited, and many of the suggested advantages and disadvantages of game-based training are present. Therefore, further research is needed to confirm this theory. In proposing an organisation of wrestling content. We seek to find ways to promote the most positive experiences for students by developing opportunities to teach and learn this broad content in physical education and sport sessions. At this point, we start to think about the different fighting actions that can be taught. This proposal is an initiative for teachers who do not have experience and training in combat sports. However, teachers who have this specific knowledge as wrestling teachers and coaches can also benefit from this proposal when seeking to develop a positive environment for the initiation of wrestling. The purpose of this study was to compare the effect of two educational methods, and to propose the game-based method as a new pedagogical approach for learning technical moves in freestyle wrestling.

Materials and Methods

Participants

The participants in this study were 20 boys in the first year (average age 18.6 years) of the physical education course at the Higher Institute of Sport and Physical Education in Ksar-Said, Tunisia. They voluntarily agreed to participate in this research. The students had no previous experience of learning to wrestle and had not participated in any sports education seasons prior to this study. The participants were randomly divided into two equal groups (10 subjects); the experimental group "GE" based on game-based training, the other group, the control group "CG" trained in the traditional way.

Study Design

A quasi-experimental study with a non-equivalent control group pre-test-post-test design, based on intact groups, was conducted to compare the effectiveness of two teaching approaches (wrestling games approach and technique-oriented approaches) in improving participants' skills bout; a) number of attempted legs attack, b) number of successful legs attack and c) number of unsuccessful legs attack. Before each training session, information about the content of the lesson was given to the participants.

Both groups of participants learned freestyle wrestling. The teaching unit was a format of 12 lessons over 4 weeks (2 days per week). Each lesson lasted 60 minutes. The control group is trained in a traditional program and the experimental group is trained on the game's methods. At the end of each training session, the participants played benchmark bouts, one on one, for 2 x 6 minutes.

Experimental Group: Pedagogical approach based

on wrestling Games

In a wrestling school, the teacher addresses young people who must be made to play. Thus, at the beginning, wrestling “games” are proposed to prepare the students to the spirit of wrestling and to the technique, in order to gradually approach the “real” wrestling thanks to the advice given through the games. Progressive measures are put in place to introduce students to wrestling. The teaching-learning process of wrestling has been described in three stages:

Step 1: Cooperative games

This stage is divided into two levels, the first being the touch games, which are considered an introduction. The second level is devoted to scarfing games. The objective is to introduce the students to contact, through games where they have to touch and act on their partner by holding on, respecting the notions of stability through the different forms of guarding in wrestling.

Step 2: Body to body games (opposition games)

The purpose is to bring the student to learn progressively the fundamental notion of bout and to lead him towards a closer and frequent contact, because it is a question of acting to win. These games require participants to place themselves within a fighting area and it do not present a risk of impact with the opponent. This level represents the opposition games which is also divided into two stages, the first one being the defending an object game. The second stage is devoted to traditional wrestling games, mainly Sumo and eagle fighting.

Step 3: Wrestling learning situations; Leg Attacks

At this time the controls will be discussed, which will not be the same for all apprentice wrestlers. We present the possibilities of actions that can be chosen as objectives. This could provide diverse experiences that could lead students to pursue wrestling in other contexts, through their affinity in fighting games. In school contexts, it may be interesting to provide support and security to teachers with no previous experience, without the need to depend on a specialization.

Control Group: Technique Approach

The Technique group began the lessons with a demonstration of the leg attack technique, followed by a series of progressive and complex learning situations. The leg techniques taught in the 12 lessons were common to those of the Games approach, namely the attacking body positions, arm control and head position. The complexity of the exercises increased progressively throughout the sessions. At the end of each training session, the participant played wrestling matches for 6 minutes freely.

Procedure

Body composition measurements

Body weight was measured using an electronic scale and rounded to the nearest 0.1 kg. The height was measured using a stadiometer (Seca 220 (CM), Seca gmbh, Hamburg, Germany) and rounded to the nearest 0.5 cm.

Physical fitness measurements

For physical performance measures a Wingate test (WAnt) was applied to identify anaerobic power and capacity of the students’ wrestlers for leg. We implemented that 7.5% of body weight for leg and 5.5% of it for arm as load in wingate test. We applied 4-5-minute-warm-up protocol including two or three sprints with the pedal speed of 60- 70 revolutions per minute longing 4-8 seconds. Each athlete performed at least three and no more than three trials, with intervals of 3 to 5 minutes between him. The interval between exercises was at least 30 minutes (Table 2).

Statistical Analysis

All the findings were examined by applying the basic descriptive statistics in which the following elements were calculated; t-test, mean, standard deviation, standard error. To compare the effect of two methods of training with traditional approach and game-based learning on the performance of selected wrestling bout skills, first, the effect of each two methods in three skills was calculated by t-test and then for comparison of these methods effects in each three skills single-variable covariance analysis (ANCOVA) was used. Shapiro-Wilk test was used to examine the distribution of research data. The confidence interval were analyzed with 0.95 ($P = 0.05$). All statistical analysis was carried out by the software package SPSS 16.0, whereas the value $p < 0.05$ was used for the level of statistical significance.

Results

At the beginning of the experiment, anthropometric characteristics was assessed by morphological measurements that assessed Age, (year), Weight (kg), Height (cm) and Body Fat (%). These tests aim to determine the initial physical fitness level of participants at the start of the experiment and, therefore, the formation of homogeneous groups with an approximately similar level of fitness to ensure the validity of the experiment.

Morphological Characteristics of Participants

The anthropometric characteristics showed in Table 1 from participants in both analytical groups (Control Group “CG” and Experimental Group “EG”) show no difference ($p > 0.05$).

For the Wingate test (Table 2), the power and anaerobic capacity of leg student’s wrestlers were identified. We did not identify a statistically significant difference in the values of the average leg

capacity (W/kg) of the student’s wrestlers selected from National Control Group “CG” and those who selected Group “EG” with ($p>0.05$).

Effect of two Teaching Methods on Legs Attack Performance in Wrestling Bout

In order to investigate the effect of traditional (technical) training and training based on wrestling games on the three combat skills, the values of the two groups in the present study were compared in the pre-test and post-test, the results of which are presented in table 3. The results showed that the data of all three wrestling bout skills in the two stages of the test were normal distribution ($P>0.05$), therefore, for statistical analysis, parametric statistical method was used. According to the test results (Table 3), both pedagogical methods enabled participants to make significant progress in the area of attack skills in a freestyle wrestling bout, such that the performance from pre-test to post-test were significantly improved ($P = 0.001$).

In the case of successful legs attack skills, the difference between the two stages of the test (pre-test and post-test) was statistically significant ($P < 0.05$). However, with regard to the mean of the two groups at the two stages of the test, it was observed that the two groups influenced by the wrestling games approach performed better at the test stage than at the pre-test stage. Nevertheless, the results on the unsuccessful legs attack variable are different,

so that there is significant improvement in the technical education group among the subjects, and the wrestling games teaching method has significant effect on the improvement of the unsuccessful legs attack performance ($P = 0.055$), but in the game-based education group, the results indicate that the progress of the subjects from the pre-test stage to the performance test is statistically significant ($P = 0.001$). In other words, game-based education has a significant effect on the subjects’ passing technique in the present study.

Comparison of the Effects of two Teaching Methods on Leg Attack Skills in Wrestling Bout

First, the equality of variances was confirmed by the Levin test for the three skills ($P > 0.05$).

To compare the effects of two pedagogical methods on leg attack skills in a wrestling bout, we used a covariance analysis with one variable (table 4).

For the competence of number of legs attacks ,the results of the pre-test show that F-value of the concordance variable is significant ($P = 0.001$, $P = 1.072$), therefore, the correlation is verified and the choice of post-test is a perfect concordance. However, the value of the F variable at group level relative to methods of teaching is statistically insignificant ($P= 0,223$ $F = 0.87$). There is no significant difference between the averages of the two research groups in the post-test. Therefore, we find that there is no significant difference between the two proposed

Table 1. Anthropometric characteristics (n=20)

Characteristics	CG (mean ±)	EG (mean ±)
Age, (year)	18.5±4.0	18.6±3.0
Weight (kg)	66.3 ±7.0	64.4 ±4.0
Height (cm)	166.5±2.0	167.5±5.0
Body Fat (%)	9.2±6.0	8.75±5.0

Table 2. Characteristics of anaerobic power and capacity of students’ wrestlers participated for the experimental group “EG” and control group “CG” (n = 20)

Characteristics	CG (mean ±)	EG (mean ±)
Leg peak power (W)	1009±357	0944±382
Leg peak power (W/kg)	13,3±2,3	12±2,7

Table 3. The effect of two teaching methods on legs attack performance in a wrestling bout (n = 20)

Group	Skills bout	M (SD)		Sig	t
		Pre-test	Post-test		
Experimental Group (wrestling games approach)	a) Nb of attempted legs attack	4.26	6.87	0.001	-3.36
	b) Nb of successful legs attack	4.05	4.0	0.004	2.5
	c) Nb of unsuccessful legs attack.	2.33	3.02	0.055	-3.1
Control Group (Technique Approach)	a) Nb of attempted legs attack	6.33	5.88	0.001	-2.02
	b) Nb of successful legs attack	3.0	3.50	0.001	1.5
	c) Nb of unsuccessful legs attack.	4.55	4.11	0.001	2.02

Table 4. Analysis of the covariance between the results of two pedagogical methods concerning legs attacks capacity.

Characteristics	df			M (SD)			F			sig		
	a	b	c	a	b	c	a	b	c	a	b	c
Post-test		1		12.04	12.04	8.28	4.455	8.23	2.74	0.005	0.001	0.001
Group		1		1.31	0.31	2.69	1.072	0.38	1.58	0.001	0.123	0.001
Errors		12		2.55	0.48	1.95						
Total		14					5.52			0.006		

Note: a) Nb of attempted legs attack; b) Nb of successful legs attack; c) Nb of unsuccessful legs attack.

teaching methods; technical and game-based on the performance of legs attacks.

The results of the covariance test for the skills of successful leg attacks indicate that the pre-test F-value is significant ($P=0.001$, $F=80.23$). However, for the group variable, F in relation to the technical method is not statistically significant ($P = 0.38$, $F = 0.123$). In addition, it has been found that there is no significant difference between the two proposed pedagogical approaches on the performance of successful leg attacks during a wrestling bout. Regarding the performance of unsuccessful leg attacks in a wrestling bout, the pre-test results show that the F-value of the co-variance is significant ($P=0.001$, $F=2.74$). The F-value of the group variable in relation to the technical method is statistically significant ($P=0.001$, $F=1.58$). We distinguish a significant difference between the two teaching methods (technical and game-based) on the success of the tests in the present study. Thus, we find that the game-based teaching method has a more significant effect on reducing the total number of unsuccessful leg attacks than the technical method. The findings of this study showed that the game-based training method, compared to the technical method, had a higher effect on the performance of the research subjects' successful leg attacks and total attacks. Nevertheless, there was no significant difference between the two training methods on unsuccessful attacks during a wrestling bout.

Discussion

The aim of the present study was to find out the effect of two teaching approaches and to propose the game-based method as a new pedagogical approach for learning technical moves in freestyle wrestling. The results were evaluated in the form of a pre-test and a post-test. The main results of this study indicate that the anthropometric characteristics of both groups of students are identical, but it is interesting to note that both groups have a low skinfold thickness and a high percentage of body fat. This proves that these wrestlers were very thin. This is consistent with previous studies in which no differences in anthropometric and physical characteristics were found between the two research

groups [30]. Indeed, the body fat content of both groups in this study is similar to the research of Ito et al. [31] who have the same age and skill level.

The results show that the technical and game-based trainers significantly improved the number of leg attacks, while the game-based trainers significantly improved the success of leg attacks. In contrast, those who participated in traditional training did not improve. These results are consistent with the findings of Gerodimos et al. [32] and inconsistent with the findings of Whitley et al. [33]. A possible reason for these conflicting results may be the type of game selected. The experimental group performed better than the technical group in the post-test of successful leg attacks. These results are in contradiction with the results of another research [34]. These results are consistent with the content of the training programme for the technical group in this study.

In the area of leg attack performance and the programme to improve it at the end of the learning cycle. For the experimental group it is likely to improve attacking performance. This may have led to a significant improvement in the 'low approach' group on the game from pre-test to post-test. A previous study reported that some college wrestling participants with shorter movement times using the leg attack had a higher percentage of wins and losses during bouts [35], which is not consistent with the lack of group differences in movement time in the present study. This could be due to the different skill levels of the participants in the two studies. In the present study, the movement quality of a leg attack was correlated with the forward movement of the upper body in all participants. Although a reduced distance between opponents may be beneficial in terms of reaching the opponent's legs faster. Despite the superiority of the game-based approach group in the leg attack performance tests, these groups had no impact on the combat environment and the success of these attacks. Villamon et al. [36] concluded in their review research that there is a relationship between the total number of attacks and successful attacks through the game-based approach.

Conclusions

The researcher's work is not driven by a desire to prescribe to coaches or teachers a good way of thinking, as they do not need to. However, to inform them of what is happening during a physical activity session that might be useful in conveying content, promoting learning and subsequently improving performance [37]. The latter is a concern of all teachers in the field of physical education, coaches and physical trainers in the field of sport. All these considerations lead them to seek new teaching and training approaches to achieve a successful learning situation with the student and with the athlete in his or her desired form on the day of the competition. In recent years, wrestling has gained popularity and offers physical educators the opportunity to teach character development because of the unique moral development experiences inherent in the sport. Wrestling bout for kids as a new approach to learning wrestling provides essential information to improve the situation of teaching wrestling in physical education classes. First through the teaching of Olympic wrestling by physical education teachers, and then as wrestling taught by specialists who can be those same physical education teachers, provided they continue to take courses that include wrestling. In order to help teachers who do not have a specialized knowledge of combat sports such as wrestling, we also wanted to propose an

organization of the content. Although our objective in this study is directed towards the teaching of combat sports in schools, it is also possible to use this proposal in other contexts, such as in wrestling promotion centers and in any other place with the objective of teaching Olympic wrestling. To do this, games would be used to get wrestlers to think in different ways to regain balance. Teachers can connect actions from other technical movements from the same family of leg attacks. In conclusion, the game-based training method seems to have beneficial effects similar to those of the classical training method in improving attack techniques in freestyle wrestling. Wrestling coaches could use this information in the teaching-learning process and planning of wrestling programmes. In this way, the training will be more specific and the transfer of the effects of this training to the efficiency of the game will be faster. Finally, and most importantly, school level wrestlers are still children and should have fun wrestling.

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Conflict of interests

The authors state that there is no conflict of interest.

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