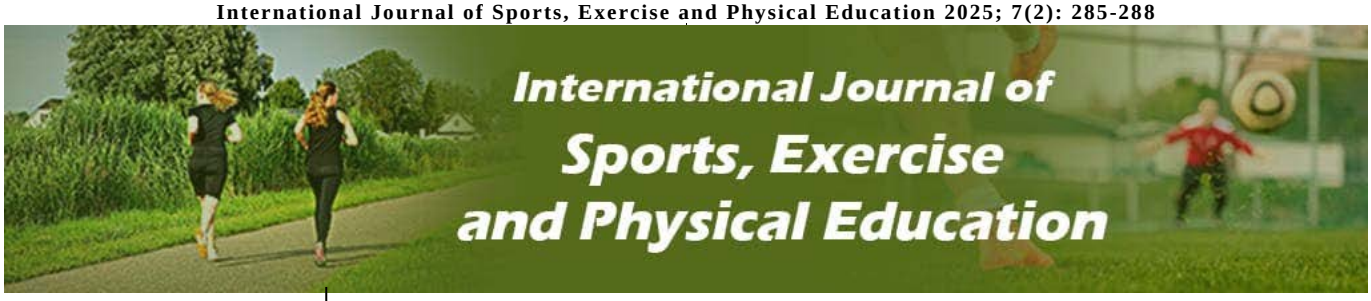

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Comparison of the Effect of Traditional and Electronic Sports on Some Motor and Physical Abilities among University Students

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Abstract
This study aims to compare the effect of traditional and electronic sports on certain motor and physical abilities among university students. The descriptive comparative method was employed, with a sample of (40) students from the College of Physical Education and Sports Sciences – Al-Mustansiriyah University, divided into two equal groups: one practicing traditional sports (football, handball, athletics), and the other regularly engaged in electronic sports (e-Sport). A series of tests were applied, including flexibility (Sit & Reach), dynamic balance (Y-Balance Test), speed (30 m sprint), agility (Illinois Test), and muscular endurance (Push-Ups).
The results revealed a significant superiority of the traditional sports group in all physical and motor variables, while the outcomes of the electronic sports group were limited and did not reach the level of significance in most tests. The study concluded that traditional sports are more effective in developing motor and physical abilities, while emphasizing the importance of balancing both activities and not neglecting the cognitive benefits of electronic sports.

Keywords: Traditional sports, electronic sports, motor abilities, physical abilities, University students

Introduction
Sport is considered one of the fundamental pillars of human life, as it contributes to the development of physical, motor, psychological, and social aspects, in addition to its major role in building a well-integrated and balanced personality. Traditional sports have long represented the primary means for developing physical attributes such as muscular strength, speed, flexibility, agility, and endurance, while also enhancing general health and improving motor abilities, which are regarded as the foundation of motor efficiency in various life activities.
With the advancement of technology and the spread of digital media, electronic sports (e-Sport) have emerged as one of the most prominent modern global phenomena. They have transformed from mere recreational games into professional competitive activities with national and international tournaments, involving millions of players and viewers worldwide. Despite the cognitive and psychological skills that e-Sports can promote—such as attention, visual focus, and quick reaction—its role in developing physical and motor abilities remains scientifically debated, particularly due to the limited physical effort required compared to traditional sports.
The significance of this research lies in its attempt to provide a scientific comparison between two types of sporting practices that differ in nature and methods. Such comparison enriches the scientific domain of physical education and sports sciences, while also offering practical results that may benefit educational institutions in shaping balanced policies between traditional and electronic activities. Moreover, it assists students in organizing their sporting practices in a way that preserves their physical health and develops their motor abilities, without neglecting the cognitive and psychological benefits that e-Sports may provide. Hence, the necessity of this study arises to explore similarities and differences between traditional and electronic sports and their impact on university students.

Research Problem

A considerable number of university students now spend long hours practicing electronic sports, while others engage in traditional sports within colleges or clubs. This raises the following question:

What are the differences between the effects of traditional and electronic sports on motor and physical abilities among university students?

Research Objectives

- To identify the level of some motor and physical abilities among practitioners of traditional sports.
- To identify the level of some motor and physical abilities among practitioners of electronic sports.
- To compare the two groups in terms of strength, speed, agility, balance, and flexibility.
- To provide scientific recommendations for guiding students toward balanced sporting practices.

Research Method

The researcher adopted the descriptive comparative method, as it is suitable for the nature of the present study, which aims to compare the effect of traditional sports and electronic sports on certain motor and physical abilities among university students.

Research Population and Sample

The research population consisted of students from Al-Mustansiriyah University – College of Physical Education and Sports Sciences.

A sample of (40) students was selected and divided into two equal groups:

- **First group (Traditional):** 20 students practicing traditional sports (football, handball, athletics…).
- **Second group (Electronic):** 20 students practicing electronic sports (e-Sport) regularly, for no less than three hours daily.

Tests Used in the Research

Flexibility Test (1) (Sit & Reach)

1. Objective: To measure the flexibility of the lower back and hamstring muscles.
2. Purpose: To assess the individual's ability to bend the trunk forward from a sitting position and the flexibility of the spine and hamstrings.
3. Tools: Sit & Reach box graduated in centimeters.
4. Performance: The subject sits with legs extended forward against the box, places hands on top of each other, and slowly bends forward without bending the knees to push the ruler as far as possible.
5. Scoring: Distance recorded in centimeters, with the best of three trials counted.

Dynamic Balance Test (2) (Y-Balance Test)

1. Objective: To measure dynamic balance and neuromuscular control of the lower limb.
2. Purpose: To assess the individual's ability to maintain stability while pushing the free leg in multiple directions.
3. Tools: Y-Balance device or adhesive tapes on the floor forming a "Y" shape.
4. Performance: The subject stands barefoot on one leg at the center of the shape, pushing the other leg in the directions (anterior – posteromedial – posterolateral), returning to the start without losing balance.
5. Scoring: Longest valid distance (cm) for each direction. Composite score = (ANT + PM + PL) ÷ (3 × leg length) × 100.

Speed Test (30 m Sprint) (3)

1. Objective: To measure short-distance running speed.
2. Purpose: To evaluate acceleration and maximal speed.
3. Tools: Straight 30 m track, cones to mark start and finish, precise stopwatch or timing gates.
4. Performance: Subject stands behind the starting line and sprints at maximum speed to the finish line upon the signal.
5. Scoring: Time in seconds to 1/100, with the best of two attempts recorded.

Agility Test (4) (Illinois Agility Test)

1. Objective: To measure the ability to change direction quickly while maintaining balance.
2. Purpose: To assess agility and speed of motor responses.
3. Tools: 8 cones, measuring tape, stopwatch, area 10 × 5 m.
4. Performance: Subject begins lying prone behind the start line, rises at the signal, and runs through the designated course between cones at maximum speed.
5. Scoring: Time in seconds to 1/100, with the best of two attempts recorded.

Muscular Endurance Test (Push-Ups – 30 seconds) (5)

1. Objective: To measure the strength and endurance of the arm, shoulder, and chest muscles.
2. Purpose: To assess the upper body's ability to perform continuous repetitions.
3. Tools: Exercise mat, stopwatch, sponge (5 cm height).
4. Performance: Subject starts in plank position, lowers body until chest touches the sponge, then extends arms to full position, continuing for 30 seconds.
5. Scoring: Number of valid repetitions only, with the best attempt recorded.

Pilot Study

The researcher conducted a pilot study on a sample of (10) students outside the main sample, with the aim of:

- Verifying the clarity of instructions and the validity of instruments.
- Calculating the time required to conduct the tests.
- Estimating test reliability through re-measurement after one week.

The pilot study showed that all instruments were valid, with the average time per student ranging between (20–25 minutes). Correlation coefficients of ≥0.80 were obtained between the test and retest, indicating the reliability and validity of the measurements.

Main Experiment Design

Population: Students of Al-Mustansiriyah University – College of Physical Education and Sports Sciences.

Sample: 40 students divided into two equal groups:

Traditional Group (TG): Physical training program.

Electronic Group (EG): Organized e-Sport practice program (FIFA/eFootball).

Duration: 8 weeks.
Number of sessions: 3 sessions/week (24 sessions).
Session length: 60 minutes.
Pre-test: Before starting the program.
Post-test: 72–96 hours after completing the program.

Training Program

A) Traditional Group

- Warm-up (10 min): Light jogging + joint mobility + dynamic stretching.
- Main part (35 min):

1. Speed drills: Progressive sprints 10–30 m.
2. Agility drills: Cone courses (T-Test/Illinois).
3. Upper-body strength drills: Push-Ups, Plank.
4. Balance drills: Single-leg stance, Y-Balance simulation.

- Cool-down (10 min): Static stretching.
- Progression: Gradual increase in volume and intensity across the 8 weeks.

B) Electronic Group

- Warm-up (8 min): Light stretching for neck, shoulders, and wrists + visual exercises.
- Main part (40 min): Playing FIFA/eFootball in a structured competitive format (10 min skill drills – 25 min match – 5 min review).
- Break (7 min): Eye rest (20-20-20 rule).
- Cool-down (5 min): Stretching for hands and neck.

Field Procedures

- Conducting pre- and post-tests under identical conditions (time, place, instruments).
- Recording results on individual data sheets for each student.

Statistical Methods

- Arithmetic mean.
- Standard deviation.
- Independent samples T-test.
- Paired T-test for pre- and post-test differences within each group.
- Significance level (0.05).

Results

Table 1: Sit & Reach Test Results (Flexibility)

Group	Pre-test (Mean±SD)	Post-test (Mean±SD)	Difference	*t* value	Significance
Traditional	21.4±3.2	27.8±3.5	+6.4	9.12	Significant ($p < 0.05$)
Electronic	20.9±3.1	21.8±3.0	+0.9	1.42	Not significant

Table 2: Y-Balance Test Results (Dynamic Balance)

Group	Pre-test (Mean±SD)	Post-test (Mean±SD)	Difference	*t* value	Significance
Traditional	85.2±4.5	92.6±3.8	+7.4	8.63	Significant
Electronic	84.7±4.2	86.1±4.1	+1.4	1.95	Not significant

Table 3: 30 m Sprint Test Results (Speed)

Group	Pre-test (Mean±SD)	Post-test (Mean±SD)	Difference	*t* value	Significance
Traditional	5.21±0.32	4.78±0.29	–0.43	7.51	Significant
Electronic	5.24±0.34	5.19±0.31	–0.05	1.10	Not significant

Table 4: Illinois Agility Test Results (Agility)

Group	Pre-test (Mean±SD)	Post-test (Mean±SD)	Difference	*t* value	Significance
Traditional	17.9±0.9	16.2±0.8	–1.7	8.05	Significant
Electronic	18.0±1.0	17.8±0.9	–0.2	1.28	Not significant

Table 5: Push-Up Test Results (Muscular Endurance)

Group	Pre-test (Mean±SD)	Post-test (Mean±SD)	Difference	*t* value	Significance
Traditional	22.5±3.1	29.6±3.3	+7.1	9.44	Significant
Electronic	21.9±2.9	23.1±3.0	+1.2	1.63	Not significant

The findings revealed significant differences between the traditional sports group and the electronic sports group across the measured variables. In the flexibility test (Sit & Reach), the traditional group achieved a marked improvement (pre-test 21.4±3.2 cm vs. post-test 27.8±3.5 cm; t = 9.12; +6.4 cm), whereas the electronic sports group showed only a slight and non-significant change (20.9±3.1 cm vs. 21.8±3.0 cm; t = 1.42; +0.9 cm). In the dynamic balance test (Y-Balance), the traditional group demonstrated significant progress (85.2±4.5 vs. 92.6±3.8; t = 8.63; +7.4), while the electronic sports group recorded a limited, non-significant gain (84.7±4.2 vs. 86.1±4.1; t = 1.95; +1.4).
Similarly, in the speed test (30 m sprint), the traditional group showed a significant reduction in time (5.21±0.32 s vs. 4.78±0.29 s; t = 7.51; –0.43 s), whereas the electronic group's improvement was negligible (5.24±0.34 s vs. 5.19±0.31 s; t = 1.10; –0.05 s). The Illinois agility test results also indicated a significant improvement in agility for the traditional group (17.9±0.9 s vs. 16.2±0.8 s; t = 8.05; –1.7 s), while the electronic group exhibited only a minor, non-significant change (18.0±1.0 s vs. 17.8±0.9 s; t = 1.28; –0.2 s). Finally, in the muscular endurance test (Push-Ups), the traditional group showed a substantial improvement (22.5±3.1 vs. 29.6±3.3 repetitions; t = 9.44; +7.1), compared with a small and non-significant gain in the electronic group (21.9±2.9 vs. 23.1±3.0; t = 1.63; +1.2).

Discussion: The results clearly demonstrate the superiority of traditional sports in enhancing motor and physical

abilities compared to electronic sports. The significant improvements observed in the traditional group across flexibility, balance, speed, agility, and muscular endurance confirm the direct role of physical activity in stimulating neuromuscular adaptation and physiological development. For example, the increase in flexibility (+6.4 cm) is attributed to stretching and continuous movement, which improve spinal and hamstring extensibility, consistent with previous findings (6). Similarly, dynamic balance improved significantly (+7.4) in the traditional group due to exercises involving body control and unilateral stance, echoing other research that emphasized the effect of structured physical training on neuromuscular control (7).

Speed and agility also showed marked gains in the traditional group, with sprint performance improving by –0.43 seconds and agility by –1.7 seconds. These findings highlight the impact of sprint and change-of-direction training on fast-twitch muscle fibers and motor coordination, aligning with previous studies (8–9). Furthermore, muscular endurance improved significantly (+7.1 push-ups), reflecting the role of resistance-based activities in strengthening the upper body, as noted in related literature (11-10).

In contrast, the electronic sports group showed only minor and statistically insignificant improvements across all variables. The slight gain in balance (+1.4) may be attributed to continuous eye–hand coordination and visual focus during gameplay, yet it was insufficient to produce meaningful effects on motor ability. These findings confirm that while e-Sports can foster cognitive and visual skills, they cannot replace the physiological benefits of traditional physical training. This conclusion is consistent with earlier reports highlighting real-world physical activity as the foundation for developing motor and physical capacities (12,13).

Overall, the study concludes that traditional sports are far more effective in improving physical and motor abilities among university students, while electronic sports provide only limited cognitive benefits without significantly influencing physical development.

Conclusion

Recommendations and Conclusion

Conclusions

1. Traditional sports are more effective than electronic sports in developing motor and physical abilities among university students.
2. Regular practice of electronic sports alone is not sufficient to improve physical fitness indicators.
3. There is a necessity to maintain balance between the two activities so that electronic practices do not overshadow real physical activities.

Recommendations

1. Encourage university students to engage in traditional sports regularly to improve fitness levels.
2. Integrate electronic sports into university activities as a recreational and competitive aspect, while emphasizing the importance of combining them with physical activity.
3. Conduct further research on the impact of electronic sports on cognitive and psychological abilities and their relation to physical activity.

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